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ABSTRACT

This guide was designed to provide classroom-level applications that can be utilized in the education of students in kindergarten through grade six. The purpose of the guide is to develop an educational process with a focus on technology education and problem solving skills that enhances the curriculum, instills in students an awareness of the importance of learning how to learn, and embraces the concept of lifelong learning. Section one of the guide outlines the Teaching Essential Life Skills (TELS) curriculum and the process of its development. Four appendices provide examples of problem solving models, a list of 90 references, a user evaluation form, and a taxonomy of educational objectives. Section two consists of 20 technology learning activities (TLAs) for students in kindergarten through second grade, while section three contains 27 TLAs for grades three through six. Section four, which focuses on career guidance and counseling, contains six general career guidance group activities, five career development group activities on gender equity, and individual career plan worksheets for each grade level. (MDM)

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T.E.T.S

TEACHING ESSENTIAL [illegible]

RANDOLPH TOWNSHIP [illegible]
RANDOLPH • NEW [illegible]

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TEACHING ESSENTIAL LIFE SKILLS

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May 1992

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INTRODUCTION

A CHALLENGE TO EDUCATORS

As the call goes out for restructuring, strategic planning, site-based management, school choice, and a plethora of other strategies to improve education, what can teachers do in the classroom which will make a difference for their students? Do we really need to totally change how we teach? Do we really need to totally change what we teach? Although we will continue to wrestle with these questions, there is one question which is critical to children and which will remain long after other strategies have disappeared: How can teachers challenge children to grow and learn in ways that will prepare them for an ever-changing world and an uncertain future?

Change is never comfortable but is inevitable. Today's educators must be willing to examine their own teaching methods and realize that procedures we used even ten years ago may not be enough today. We must examine planning and teaching procedures which will make students more responsible for their own learning. Students must also be competent users of a process of problem solving which will guide them through personal, educational, and professional dilemma now and in the future.

If this sounds like an impossible challenge, be assured that there are strategies available that will help you achieve these goals. This four-section document, developed by the participants in the Randolph Township TELS project, will give you classroom-level applications that can make a real difference for your students.

The purpose of the TELS Grant is to offer a process for preparing our children today for a world of tomorrow we cannot envision because change is happening so rapidly. Employers tell us there are workplace basics which will remain important regardless of change. These include: learning how to learn and embracing the concept of being lifelong learners, being creative thinkers and problem solvers, working effectively in groups, acknowledging personal abilities and the abilities of others, and being able to set goals and achieve them while taking pride in one's own work. The importance of listening and oral communication skills, as well as competence in reading, writing, and computation remain critical skills. Developing an educational process which achieves these goals and which enhances the curriculum in grades kindergarten through grade six is the focus of the Randolph Township TELS project.

Demands for a complete overhaul of the schools and the education they provide are coming from every corner of the nation. This continual call for educational reform may be justified if we are not willing to ourselves be lifelong learners, problem solvers, and change agents. Our current fourth grade students will graduate high school in the year 2000. Many of those students will change careers up to seven times. As many as eighty percent of the jobs they will seek are not in existence today, and the jobs that will be available will require higher technical skills than ever before. Will our students be prepared to meet this challenge? At least a portion of the answer lies in our professional domain.

Teacher/astronaut Christa McAuliffe's often-used quote, I TOUCH THE FUTURE, I TEACH, has tremendous power and a professional challenge. Challenge yourself to explore and implement strategies in your classroom which will effectively train all students to be creative problem solvers ready to face the great demands their futures hold.

HOW TO USE THESE BOOKLETS

This set of documents represents Randolph Township's implementation of the TELS Grant project from September 1991 through May 1992. Before you begin planning how to tackle the sections of this document, please take a moment to understand how we structured the information.

Our plan was to present the information in a format which could be easily understood and then implemented at the classroom level. Each section is designed to be easily distributed to the appropriate staff and to be a usable guide for incorporating technology activities and/or guidance activities into the classroom.

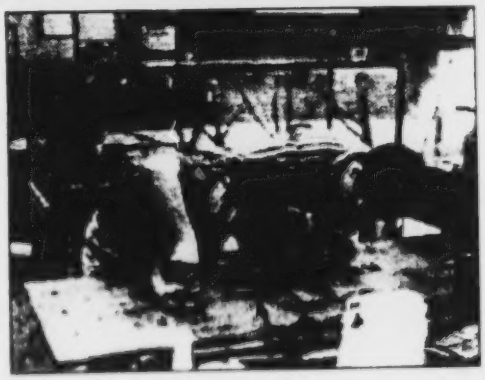
The PROGRAM DESCRIPTION offers an overview of the components of the Randolph TELS project. It gives general information about Randolph's descriptors and demographics for comparison to your own school, and explains how the implementation was structured.

This section also answers the question, "What is technology education?" Beware, it is NOT just using comput-

ers. We strongly recommend that you thoroughly read this section for a detailed understanding of the process which underlies all technology education activities. There is an overview of technology education at the elementary level, which includes an explanation of how to use the problem solving model, the technology learning activities (TLAs), and the documentation procedures students should follow. Documentation is a critical component, and moves the TLA from simply a fun activity to an activity that can be shown to enhance and increase student learning.

An overview of the importance of career guidance and counseling is presented, as well as our approach to incorporating these concepts. Appendix B is a listing of teacher resources for career guidance, counseling topics, and technology education is given. These resources include professional and service organizations, materials you can use in the classroom, and research/professional readings.

The two Technology Education sections, TECHNOLOGY LEARNING ACTIVITIES, GRADES K-2 and TECHNOLOGY LEARNING ACTIVITIES, GRADES 3-6, give a minimum of three language arts and three math technology learning activities (TLAs) for each grade level, K-6. These TLAs can be reproduced as shown to serve as teacher lesson plans and project directions for students. We hope you will challenge yourself to use these as guides for preparing similar activities within other disciplines; for example, many of the language arts activities could be used just as easily with other examples of literature or for social studies enrichment.



The CAREER GUIDANCE AND COUNSELING section begins by giving the procedures we used and a copy of the needs assessment which was administered. Each component of the guidance initiatives are then thoroughly explained and lesson plans to support specific components are given. The student activities are supported by reproducible masters.

We have attempted to make this material easy to use, and we know by our evaluative feedback from both classroom teachers and students that the activities are exciting, fun, and true learning experiences. Appendix C is an evaluation form for you to complete if you would like to comment on our project and your success in implementation. Feel free to mail the form to us any time during the 1992-93 school year. We are always excited to hear of successes as well as suggestions from other educators. Good Luck!

Section I • PROGRAM DESCRIPTION

TEACHING ESSENTIAL LIFE SKILLS

RANDOLPH TOWNSHIP SCHOOLS
RANDOLPH • NEW JERSEY

PROJECT OVERVIEW

MINDS IN MOTION—RANDOLPH'S TELS PROJECT

The Randolph TELS project was designed to develop, field test, and implement curriculum and counseling activities for grades kindergarten through six. The goal was to foster and assist students in acquiring lifelong career development strategies, workplace basics, and life skills necessary to function in an increasingly technological society. The foundations for the developed strategies and activities were the National Career Development Guidelines (NCDG) and the Technology Education Proficiencies (TEP).

A series of objectives were then developed to address the two components of the grant—technology education infusion and career guidance. To summarize the objectives related to infusing technology education principles, we identified four classroom teachers at each grade level, K-6, to participate on a curriculum development committee; identified areas in the existing language arts and mathematics curriculums which could be enhanced by technology education activities; and developed and field tested those activities. To address the career guidance component, we developed and field tested a range of elementary counseling activities related to gender equity and success in school for at-risk students and developed a system of individual career plans. The sections of this document offer a template for implementing a problem-solving approach to curriculum at the elementary level and is supported by a series of appropriate activities. The technology and guidance activities are easy to understand and could be implemented immediately by any classroom teacher and/or elementary counselor.

RANDOLPH TOWNSHIP DESCRIPTORS

Randolph Township consists of 22.88 square miles in the center of Morris County, New Jersey, with primarily a residential tax base. The township is considered suburban and is in close proximity to major national and international corporate headquarters.

Randolph is a K-12 district with four elementary schools (K-6), one middle-level school (7-8) and one high school (9-12). The sixth grade will move out of the elementary schools and into the middle-level school, making it a 6-8 middle school, by the beginning of the 1994-95 school year.

The Township's population is approximately 21,000 with a total school enrollment just over 4,000 as of September 1991. Of the school age children in the district, the high school has approximately 30% (1,200 students), the middle-level school about 16% (650 students), and the elementary schools about 54% (2,200 students). Although the majority of students in the schools are caucasian, we have an ever-increasing minority population. African-Americans, Asians, Indians, and Latinos represent the greatest numbers within our minority population.

Each of the four elementary schools in the district have a Kindergarten through grade 6 structure. From grade one students are taught through a team concept. Students have different teachers for their core subjects with special subjects being taught by staff dedicated to specials.

The Director of Pupil Personnel Services oversees grades K-12 guidance services, but because of financial constraints, there are no guidance services in the elementary schools. This TELS grant resulted in development of components of an elementary guidance program and implementation of career guidance activities in the classrooms.

OPERATIONAL PLAN

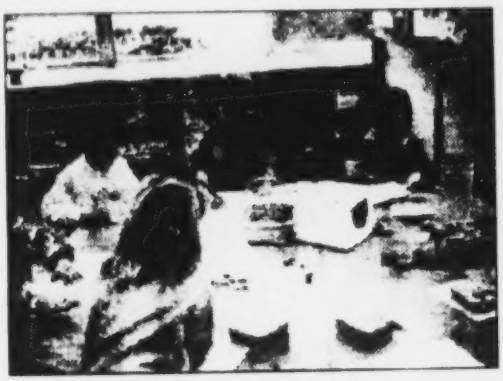
To cover the established objectives of the grant and to carry out components of the program we designed, two professionals were employed. An elementary curriculum coordinator was brought on staff to carry out the coordination of grant objectives and, primarily, to oversee the technology aspects of the grant. An elementary guidance counselor was also employed to develop and implement the career guidance components of the grant.

The elementary curriculum coordinator worked closely with elementary teachers in determining areas of the curriculum which could be enhanced by applications of technological problem solving and to help develop and evaluate the Technology Learning Activities (TLA's) ultimately developed. This person was not to be involved in any staff evaluation, but rather was to be classroom-level support for elementary teachers, including helping them through self evaluation and activity evaluation. The classroom teachers who worked with the elementary curriculum coordinator were volunteer members of the district TELS Curriculum Development Committee. Makeup of this group was one teacher at each grade level, K-6, from each of the four ele-

mentary schools for a total of 28 teachers, 7 from each school. These teachers received two full-day in-service sessions on the principles, process, and content of technology education. The activities, which appear in this document, were developed through release-time meetings held with the coordinator.

The overall goal of working with the 28 teachers was to ensure they understood and could apply the principles of technology education. The immediate objective was for them to be developers of appropriate Technology Learning Activities (TLAs) which they would field test and evaluate. The long-term objective was for these teachers to be mentor/trainers of other professional staff in their school at their grade level.

Because Randolph Township Schools currently does not provide elementary guidance services, the elementary guidance counselor was charged with working closely with the Director of Pupil Personnel Services to develop and implement a wide range of guidance activities. The counselor field tested the activities in classrooms and in small groups. Classroom teachers also volunteered to field test the career development activities.



The guidance counselor developed a needs assessment for teachers, a system of individual career plans for K-6 students, and career/counseling activities. The counseling activities targeted for an identified at-risk population dealt with success in school. The career development activities were designed for grades 4-6 and dealt with gender equity. We had the opportunity to field test the gender equity activities in grade 2, however, and found they were appropriate for children that young as well.

The approach taken toward guidance, both through career development and at-risk activities, reinforced the problem-solving model which is the basis for the technology aspect of this grant. Having a systematic approach for solving problems and learning to compromise and work together to tackle tasks and solve problems are critical skills for all students. Because the activities are related to careers and family structures and roles, infusion into social studies would be appropriate.

TECHNOLOGY EDUCATION— GIFTED EDUCATION FOR ALL

An understanding of technology education must begin with a working definition of technology. Technology is the process of applying knowledge to satisfy human needs and wants and extend human capabilities. The devices humans use to adapt to their environment are developed through the process of applying knowledge and ingenuity, and are the end result of technology. When we build household convenience items to make our lives easier, we are applying the technology process. When we build bridges to cross mighty rivers and buildings hundreds of stories high, we are applying the technology process. We have a rich history of inventions to extend human capabilities, and the information age is increasing this knowledge base more rapidly than ever.

Caissy (1992) tells us that "the greatest knowledge explosion in the history of mankind is underway" and that students must develop skills that allow them to be lifelong learners and independent users of information. For children to become contributing adults in our fast-paced, quickly-changing society, they must be comfortable with change, be critical thinkers, and be problem solvers—competencies central to technology education. Sellwood (1989) believes the challenge to schools is great. Knowledge has doubled in the last ten years and is expected to treble in the next ten. Knowing what precise skills to teach children is difficult, therefore, skills taught must be broad based, such as critical thinking and problem solving, which enable student to adapt and cope with continual change.

Problem solving is not something to switch on and off, it should be developed as a constant. Problem solving is the basis of all good teaching practice . . . It is an investigative approach that should have its foundations in early schooling and develop with each stage of education. (Sellwood, 1989, p. 3.)

WHAT IS TECHNOLOGY EDUCATION?

Technology education is an interdisciplinary approach to teaching and learning which examines the process used for extending human capabilities and solving human problems through application of a problem solving model. Technology education should not be confused with educational technology. Educational technology refers to the technological tools (computers, CD-ROM, etc.) available to enhance and enrich both teaching and learning. Those technological tools are actually the result of the process of applying knowledge to develop tools which extend the capabilities of people.

Technology education involves the following proficiencies:

1. Identify, apply, and evaluate technological systems to solve problems.
2. Identify, evaluate, select, and process resources to create and improve technological systems.
3. Use an integrated approach to solving problems.

4. Identify and demonstrate the technological design/problem solving skills and processes when developing solutions to problems.
5. Evaluate the impact of technology on the individual, society, and the environment.
6. Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
7. Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
8. Work independently and cooperatively in technological activities.
9. Think creatively and critically to explore, discover and solve technological problems.
10. Research and evaluate the past and apply decision-making skills for shaping values.
11. Identify, explore, and evaluate career opportunities and leisure time interests associated with technology.
12. Recognize the evolving, dynamic nature of technology and demonstrate its potential for impacting futures.

Technology education at the elementary level focuses heavily on technology awareness through application of the problem solving model. The process represented by this problem solving model, although based on exploring the technological world we live in, can be used to solve personal, professional, and educational problems throughout life.

The problem solving model, developed by the Commission on Technology Education for the State of New Jersey (1987) consists of nine steps. For the elementary grades, however, the model is simplified into four steps for the primary grades advancing to an eight step model for more advanced students or higher elementary grades, as shown in *Figure 1 and 2* (full-sized copy masters in Appendix A). Let's take a minute and determine what each step involves. We'll use the eight step model shown below for this purpose.

Identifying the problem. The problem can be teacher generated or student generated. The process starts with a critical examination of real-world situations to determine the presence and nature of a problem.

Detective work. Students begin research to learn more about the problem and how other people have solved similar problems in the past.

Tying down the problem (DESIGN BRIEF). A statement describing what a solution to the problem should do and what constraints are being imposed to keep the process on track.

Exploring ideas. Students typically work in groups and brainstorm possible solutions to the problem. In technological problems there are no right or wrong answers, only good or bad solutions. To arrive at a good solution, the students will need to look at many alternatives. This will probably be the most challenging step in the process, calling for originality, flexibility, and teamwork.

Planning. After all research, students select the one idea they believe best meets the criteria. The idea chosen is then examined in detail. The examination can be through narratives, drawings, simulations, and/or other creative endeavors.

Fig. 1 - FOUR STEP PROBLEM SOLVING MODEL

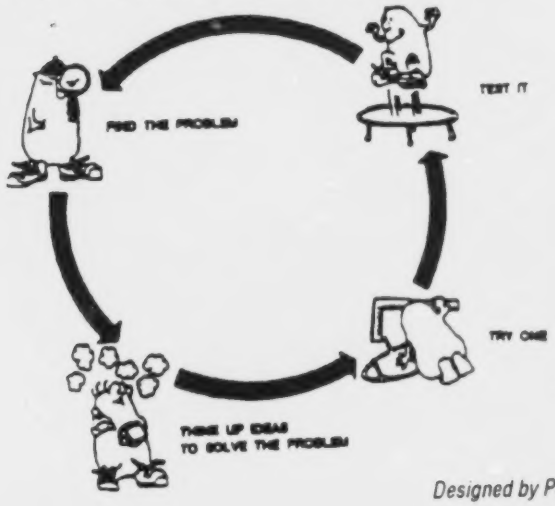


Fig. 2 - EIGHT STEP PROBLEM SOLVING MODEL

Designed by Patricia Hutchinson

Making. The students make a model of their problem solution. This model need not be a working model, but should depict their solution which could then be thoroughly explained through narrative or oral presentation.

Testing. The solution should be evaluated against the requirements established in the design brief and against the original problem.

Fixing. This process should include an evaluation of the solution selected and possible improvements to that solution. This could involve trying another solution, improving on the original solution, or preparing a narrative or oral presentation on their proposed improvements and changes.

This last step could be the springboard to enter the problem solving model at one of the other points to reexamine the research or try another alternative. At this point a discussion on the impacts of this new technology would be appropriate.

The necessary components of technology education include:

1. Developing open-ended activities, typically referred to as technology learning activities (TLAs).
2. Following the problem solving process.
3. Documenting the process from beginning to end of each activity.
4. Incorporating technological content.
5. Meeting established grade-level objectives.

We'll look at these components in the following sections.

TECHNOLOGY LEARNING ACTIVITIES (TLAS)— FORMAT FOR CHANGE

Technology Learning Activities (TLAs) are open-ended situations which promote critical thinking and problem solving skills by having students work through problems using the problem solving model. The TLA challenges students to think critically, problem solve, research, document findings, analyze information, make difficult choices, plan strategies, manipulate materials, work cooperatively with peers, and evaluate outcomes. TLAs encourage students to take responsibility for their own learning, which gives them a feeling of accomplishment and sense of pride in their work. Technology education gives students a better understanding of and appreciation for their personal strengths and growth areas. This in turn allows them to better appreciate one another and realize that everyone has something worthwhile to contribute to our society.

The TLAs in this document are interdisciplinary. There will be three TLAs with a jumping-off point in math and three in language arts. They are designed to help students discover links between various subject areas. Students will apply writing and researching skills and expand their vocabularies through the documentation required of all TLAs. A well-designed TLA is open ended enough to challenge the below average and gifted student alike.

The TLA format and language are important. The DESIGN BRIEF describes a situation, and offers an open-ended solution for the problem found in the situation. For example:

Situation:

Thousand of acres of forests are destroyed by fires every year. Many of these fires are caused by carelessness and can be easily avoided. Early detection of a fire can help minimize damage to our precious forests.

Problem/Solution:

Because of your expertise and family background, (your great grandfather was Gustav Eiffel), you have been hired by the park service to design and build a structure high enough for early detection of fires.

The wording of the solution is important because of the mind set people have of certain types of devices. For example, in the problem/solution stated above, if we were to design and build an observation tower rather than a structure, the ideas the students would come up with may be very similar. Leaving it more open ended by stating structure may result in more creative results. If you were working on a TLA related to transportation, you would use the word vehicle rather than car for more creative results. It is better to have the students design and build something rather than a specific known device.

The resources of technology must be listed and include time, energy, people, knowledge, materials, capital, and tools and equipment. The items listed under each category delimit what can be used to design and build the solution.

DOCUMENTATION— THE HEART OF THE MATTER

Documentation is the critical component that separates a fun activity from a technology learning activity which increases student learning. Students document the procedures followed and the analysis of successes and failures through each step of the problem solving model.

The obvious skills developed by having students prepare documentation are research skills, writing process skills, and writing skills. By having students seriously work on preparing their documentation, you are reinforcing all of the skills outlined in Bloom's Taxonomy (Appendix D), but especially the higher order thinking skills of analysis, synthesis, and evaluation. The documentation allows the teacher to analyze the thought processes each student used and to monitor growth in those skills.

The design process typically calls for the student to plan and sketch ideas prior to building their solution. Developmentally, however, children in grades K-2 cannot perform those abstractions and need to manipulate materials before any documentation is attempted.

There is a developmental progression in documentation preparation. Younger children will typically depict their progress and results through pictures and one- or two-word phrases. Grades 2 and 3 will typically have drawings and sentences explain their progress. Grades 4 through 6 will be using paragraph writing skills and more technical drawings through the process.

Suggested evaluative criteria for projects and documentation appear in Appendix A. It is suggested that evaluation of student performance be based primarily upon the quality and thoroughness of the documentation, which shows understanding and application of the process, rather than the quality of the finished model or project.

CAREER GUIDANCE AND COUNSELING

THE IMPORTANCE OF CAREER GUIDANCE

As social and economic forces impact families and the services they require, a new definition of career guidance and counseling is being developed. The theory of career development is providing a basis to address the new demands, which include increased emphasis on equality of education and employment opportunities for all Americans, new pressures created by changing gender roles, a rapidly changing workplace that is making career planning a lifelong need, increased demand for accountability within our educational programs, and the application of technology (National Occupational Information Coordinating Committee, 1989). Generally, career development now refers to an individual's total lifestyle—occupation, education, social responsibility, and leisure.

As outlined in the National Career Development Guidelines, career development plays a key role in an institution's comprehensive educational program, and has unique goals requiring specific structure, processes, and staff expertise. A career guidance and counseling program:

- Is identifiable but integrated with other programs with in the institution.
- Enhances the career development knowledge, skills, and abilities of all students by establishing program standards.
- Uses coordinated activities designed to support student achievement of the standards.
- Supports delivery of the program through qualified leadership; diversified staffing; adequate facilities, materials, and financial resources; and effective management.
- Is accountable, with evaluation that is based on program effectiveness in supporting student achievement of the career guidance and counseling standards. (p. 1)

Ultimately, the quality of career guidance will depend on the local school's commitment to develop and implement quality programs. Ideally, each school will establish their own program standards and then design, implement, and evaluate its own career guidance and counseling program based on the needs of their students.

The National Career Development Guidelines (NCDG) offer broad strategies to plan, develop, and implement such programs by giving a framework which takes national trends into account. Projects, such as this TELS project, applies the NCDG to specific classroom activities designed to meet the needs of our students. Integrating the problem solving model in conflict resolution, gender issues, and programs to help students at risk is an application that has proven successful in the activities that appear in the CAREER GUIDANCE AND COUNSELING section of this document.

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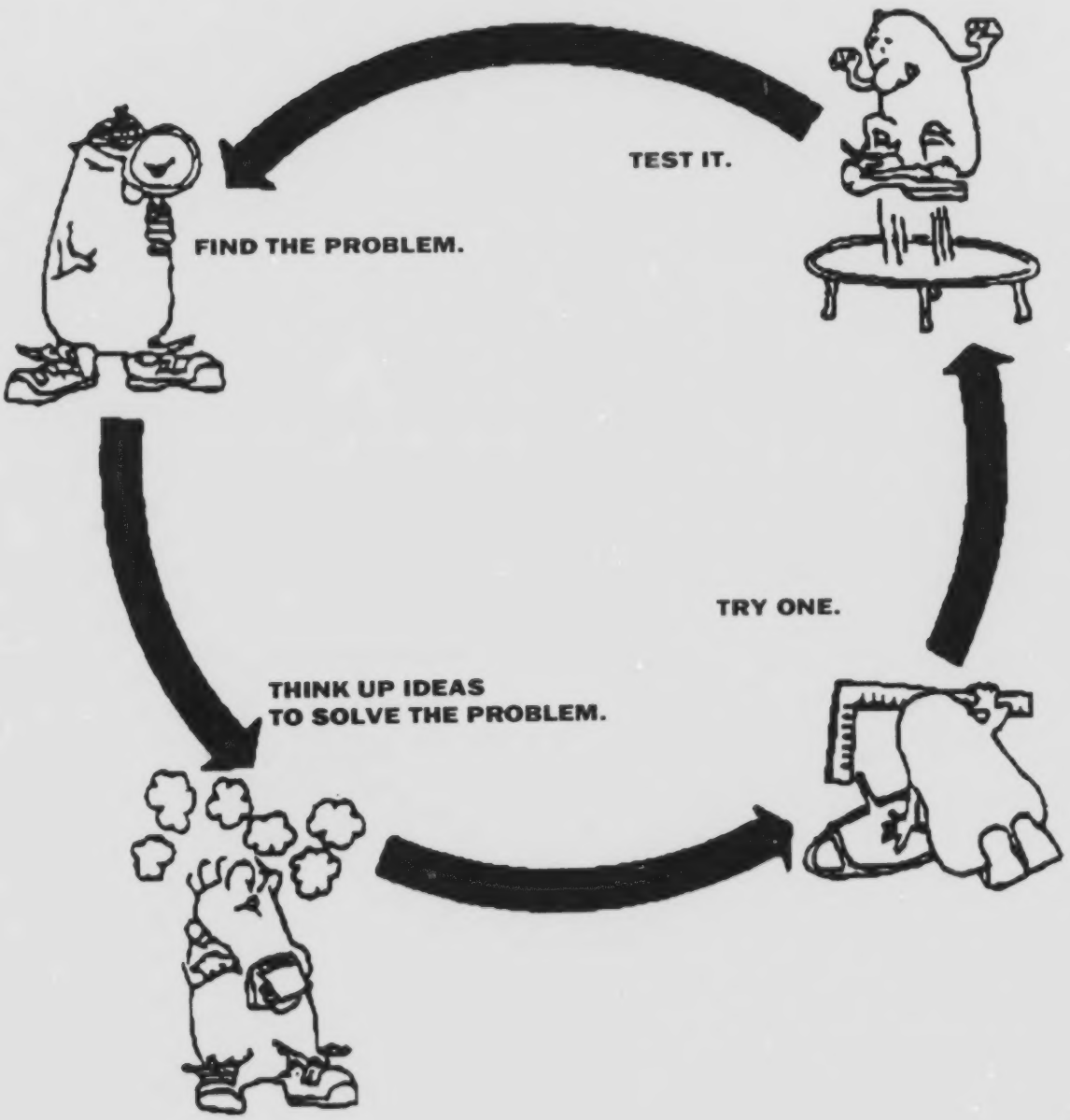
APPENDIX A

Four Step Problem Solving Model
Student Documentation Sheets
Teacher Guidelines for the Evaluation of Student Performance

Eight Step Problem Solving Model
Student Documentation Sheets
Teacher Guidelines for the Evaluation of Student Performance

FOUR STEP
PROBLEM SOLVING MODEL



Designed by: Patricia Hutchinson

DOCUMENTATION SHEET

FOUR STEP PROBLEM SOLVING MODEL

FIND A PROBLEM.

IDEAS TO SOLVE THE PROBLEM.

TRY ONE.

TEST IT.

FOUR STEP PROBLEM SOLVING MODEL
TEACHER GUIDELINES FOR
THE EVALUATION OF STUDENT PERFORMANCE

PROCESS EVALUATION:

Find the Problem

- Experiences difficulty in recognizing the problem.
- Satisfactory recognition of problem.
- Clearly identifies and states the problem.

Think up Ideas to solve the Problem

- Experiences difficulty in generating ideas. Only one solution considered with minimal attention to detail.
- Satisfactory creative thought process with several solutions considered in detail.
- Many ideas considered in detail. Reasons for rejecting alternatives clearly stated.

Try One

- Experiences difficulty manipulating materials. Minimal effort put forth by the student.
- Satisfactory manipulative skills. Inconsistent effort expended on the part of the student.
- Manipulates materials well. Student demonstrates an understanding of the relationship of parts. Genuine effort put forth by the student.

Test One

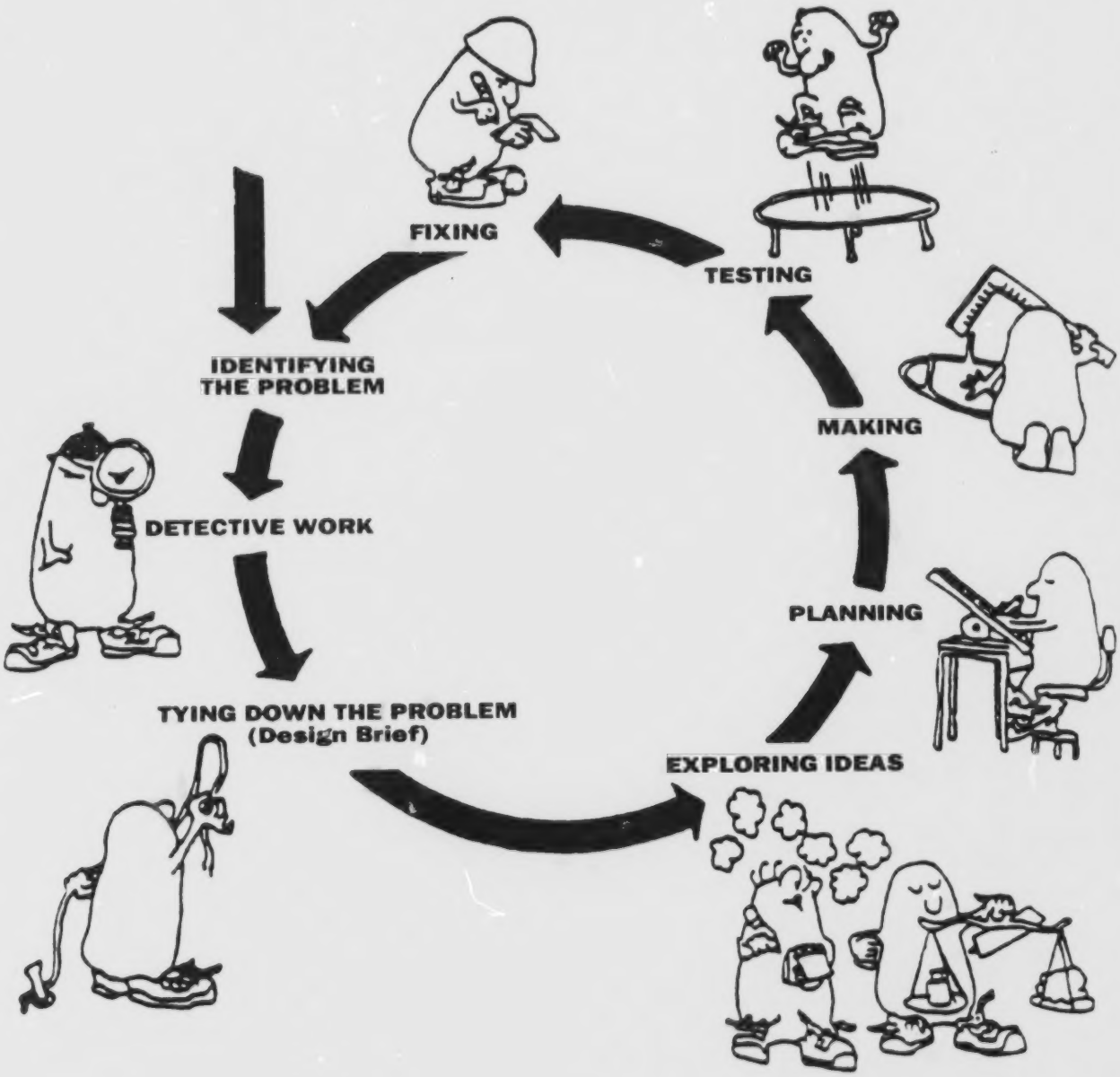
- Experiences difficulty meeting testing criteria. Weak presentation of results.
- Satisfactory testing results achieved. Presentation of results lsck scope and sequence.
- Testing criteria are met with outstanding results, or details are given of modifications which would ensure outstanding results. A thorough presentation of results is evident.

PROJECT EVALUATION:

Solution

- Experiences difficulty providing evidence of work.
- Satisfactory amount of work with realistic choice and use of materials where appropriate. Several examples of attention to detail.
- Evidence of thorough work appropriate to time allotted. Solution demonstrated an understanding of all aspect of the design process.

EIGHT STEP
PROBLEM SOLVING MODEL



Designed by: Patricia Hutchinson

DOCUMENTATION SHEET

EIGHT STEP PROBLEM SOLVING MODEL

FIND A PROBLEM

DETECTIVE WORK

(How have others solved similar problems? What do I know about the problem?)

DESIGN BRIEF

(What guidelines must I work within?)

RESOURCES OF TECHNOLOGY

Time (for EACH step of the problem solving process)

People

Knowledge/Skill

Materials

Tools/Equipment

Energy

Capital

Other

IDEAS TO SOLVE THE PROBLEM

PLANNING
(What should final solution look like?)

MAKING

TESTING
(What happened?)

FIXING
(How will you change solution to make it better?)

EIGHT STEP PROBLEM SOLOVING MODEL
TEACHER GUIDELINES FOR
THE EVALUATION OF STUDENT PERFORMANCE

PROCESS EVALUATION:

Find the Problem

- Experiences difficulty in recognizing the problem.
- Satisfactory recognition of the problem.
- Clearly identifies and states the problem.

Detective Work

- Experience difficulty in recognizing the problem.
- Satisfactory recognition of the problem.
- Clearly identifies and states the problem.

Tying Down the Problem

- Experiences difficulty in finding direction. Little or no evidence of investigation or research by the student.
- Satisfactory evidence of research conducted by the student but investigation is lacking in depth.
- Evidence of good research. Student has acquired new knowledge about the nature of the problem. An investigation of solutions to similar problems is evident.

Tying down the Problem (Design Brief)

- Experiences difficulty in define the problem and determining specifications.
- Satisfactory definition of problem with some specifications developed to assist in focussing the student on a solution.
- Clearly defined statement describing what a solution to the problem should do and what constraints are being imposed to keep the student on task.

Exploring Ideas

- Experiences difficulty in generating ideas. Only one solution considered with minimal attention to detail.
- Satisfactory creative thought process with several solutions considered in detail.
- Many ideas considered in detail. Reasons for rejecting alternatives clearly stated.

Planning

- Experiences difficulty in organizing and sequencing the steps necessary to implement the solution.
- Satisfactory organizational skills and realistic understanding of the processes necessary for the successful implementation of the solution.
- Excellent organizational skills. The solution is well planned as evidenced by the detailed sketches and/or text examining all aspects of the design process.

Making

- Experiences difficulty manipulating materials. Minimal effort put forth by the student.
- Satisfactory manipulative skills. Inconsistent effort expended on the part of the student.
- Manipulates materials well. Student demonstrates an understanding of the relationship of parts. Genuine effort put forth by the student.

Testing

- Experiences difficulty meeting testing criteria. Weak presentation of results.
- Satisfactory testing results achieved. Presentation of results lack scope and sequence.
- Testing criteria are met with outstanding results, and/or details are given of modifications which would ensure outstanding results. A thorough presentation of results is evident.

Fixing

- Experiences difficulty in evaluating the solution and recognizing aspects which could be improved upon.
- Satisfactory ability to objectively evaluate the solution and offer some suggestions for improvement.
- Good evaluation of the solution. Detailed reasons given for the success of the project, or details given of the modifications or alterations which would ensure a successful solution.

PROJECT EVALUATION:

- Experiences difficulty providing evidence of work.
- Satisfactory amount of work with realistic choice and use of materials. Several examples of attention to detail.
- Evidence of thorough work appropriate to the time allotted. solution demonstrated an understand of all aspect of the design process.

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APPENDIX B

RESOURCES

RESOURCES/PROFESSIONAL READING

GENERAL

Consortium for Educational Equity
Arlene S. Chasek, Project Director
Rutgers, The State University of New Jersey
Kilmer Campus 4090
New Brunswick, NJ 08903

International Technology Education Association.
1914 Association Drive, Reston, VA 22091

K-12 Technology Education Proficiency Development Committee. (1989). K-12 Technology Education Proficiences: Technology Education from Problem to Solution. Trenton, NJ: State Department of Education.

National Occupational Information Coordinating Committee. (1989). National Career Development Guidelines. Washington, DC: Author.

New Jersey Sex Equity Technical Assistance Centers:

PROJECT RAE—Equity Assessment Services
Joanne Cote-Bonanno, Director
Montclair State College
Life Skills Center
Upper Montclair, NJ 07043
201-893-4172

PROJECT TIDE—Staff Development, Workshops, and Conferences
Mary Switzer, Director
Trenton State College
Martin House
Hillwood Lakes, CN4700
Trenton, NJ 08650
609-771-2816/2714

PROJECT VOW—Resources and Marketing
Carole Ucciferri, Director
Jersey City State College
2039 Kennedy Blvd.
Jersey City, NJ 07305
201-200-2188

The Secretary's Commission on Achieving Necessary Skills. (1991, June). What Work Requires of Schools—A SCANS Report for America 2000. Washington, DC: U.S. Department of Labor

GENDER EQUITY

American Association of University Women. (1991). Shortchanging Girls, Shortchanging America.

Bitters, B. & Keys, M. (1988). Classroom Activities in Sex Equity for Developmental Guidance. WISCONSIN DEPARTMENT OF PUBLIC INSTRUCTION.

Challenging the Stereotypes: Activities for the Classroom. TRENTON STATE COLLEGE.

DeNys, M. & Wolfe, L. R. Learning Her Place: Sex Bias in the Elementary School Classroom. (PEER Report, No. 5) Washington DC: NOW Legal Defense and Education Fund. (ERIC Document Reproduction Service No. ED 270 337).

Equity Exercises for Teachers as Advisors. FLORIDA LEADERSHIP DEVELOPMENT PROGRAM FOR SEX EQUITY.

Great Women. (poster). ORGANIZATION FOR EQUAL EDUCATION OF THE SEXES.

The Fable of He and She. (video). (1974). LEARNING CORPORATION OF AMERICA.

Facts and Reflections on Careers for Today's Girls. (1985). GIRLS CLUB OF AMERICA.

New Jersey Vocational Equity Resource Catalog. (1991). NEW JERSEY STATE DEPARTMENT OF EDUCATION.

Noddings, N. (1992, December/January). The Gender Issue. EDUCATIONAL LEADERSHIP, p. 65-70.

Our Civil Rights. (flyer). Madison, Wisconsin: MADISON PUBLIC SCHOOLS.

Pearson, S. (1984). Everyone Knows That. (video). PHOENIX BSA.

PROJECT VOW—VOCATIONAL OPPORTUNITIES FOR WOMEN PROJECT Jersey City State College, 201-200-2188

- Damaging Effects of Sex-Role Stereotyping on Boys and Men, Girls and Women.
- Day By Day Language is the Vehicle of Thought. (1991, Calendar).
- Fairy Tail-Twisters for the '90'S. (1990).
- Fairy Tail-Twisters (activities). (1990).
- From A Auto Mechanic to Z Zoologist. (1990).
- Nontraditional Careers - Tips for Recruitment and Retention.
- Other Available Handouts:
  - Why Sex Equity? Why Promote Nontraditional Options?
  - Advantages of Nontraditional Jobs.
  - Some Occupations Remain Segregated By Sex.
  - The Changing Roles of Men and Women: Educating for Equity in the Workplace.
  - Gender equity assessments.
  - For the Girl Growing Up Today, A Pumpkin, Six Mice and a Pair of Glass Slippers Just Won't Do It. (poster).
  - Activities: People in My Community, Mind's Eye, Occupational Language.
  - Unfinished Business, Who Works at This Occupation?
  - New Jersey Vocational Equity Resource Catalogs: Distribution Materials, Audio Visuals, Lending Library.

Sadker, M., Sadker, D., & Steindam, S. (1989, March). Gender Equity and Education Reform. EDUCATIONAL LEADERSHIP, p. 44-47.

The Tredyffrin/Easttown Program: Stage One Manual, Stage Two Manual, Stage Three Manual. (1979). U.S. DEPARTMENT OF HEALTH,EDUCATION AND WELFARE.

Van Buren, J. Daines, J. & Burtner, J. (1990). Gender Equity: An Issue Throughout the Life Span. JOURNAL OF HOME ECONOMICS, 3-10.

Webster, N. (1989). Positive Approaches to Achieving a Pluralistic Environment For Students in Elementary and Secondary Schools & Institutions of Higher Education. SKIDMORE COLLEGE.

Westoff, L. A. (Ed.). (1979). Women—In Search of Equality (Focus 6). Princeton, NJ: Educational Testing Service.

What's going on? (Operation Smart). GIRLS CLUBS OF AMERICA.

COUNTELING ISSUES
(AT RISK, SELF-ESTEEM, SCHOOL SUCCESS, ETC.)

50 Ways to Enhance Self-Esteem. NEW JERSEY EDUCATION ASSOCIATION.

Baas, A. (1991, September). Promising Strategies for At-Risk Youth. ERIC DIGEST.

Barrows, L. (1992). Job Jungle. CFKR CAREER MATERIALS, INC. Teaching Aid Kit for Job Jungle (1992). CFKR CAREER MATERIALS, INC.

Childers, J. Jr. (1989, February). Looking at Yourself Through Loving Eyes. ELEMENTARY SCHOOL GUIDANCE & COUNSELING.

Clabby, J. & Elias, M. (1988, December/January). Your Child Can Learn to Make Decisions. PTA TODAY.

A Cultural Mosaic—a Multicultural Program for Primary Grades. ANTI-DEFAMATION LEAGUE OF B'NAI B'RITH.

Esquivel, G. & Keitel, M. (1990, February). Counseling Immigrant Children in the Schools. ELEMENTARY SCHOOL GUIDANCE & COUNSELING.

Gerler, E.R. & Anderson, R.F. (1986). The Effects of Classroom Guidance on Children's Success in School. JOURNAL OF COUNSELING AND DEVELOPMENT.

Harrison, T. Jr. (1991, November/December). School Counseling. THE CLEARING HOUSE.

Jiminy Cricket, P.S.—Problem Solver. (video). (1983). WALT DISNEY EDUCATIONAL MEDIA COMPANY.

Meade, J. (1991, May/June). Putting Words in Their Mouths. TEACHER MAGAZINE.

Merina, A. (1991, September). Uncommon Classrooms, Undivided Attention. NEA TODAY.

Needs Assessment Evaluation. PARSIPPANY/TROY HILLS SCHOOLS. ROCKAWAY, NEW JERSEY.

Pelsma, D. (1988, November). Children Coping With Stress: A Workshop for Parents. THE SCHOOL COUNSELOR.

Rubin, A. (1989, October). Preventing School Dropouts Through ClassroomGuidance. ELEMENTARY SCHOOL GUIDANCE & COUNSELING.

Thompson, C. & Rudolph, L. (1992). Counseling Children, Second Edition. BROOKS/COLE PUBLISHING COMPANY.

Weisman, J. (1991, May/June). The Apostles of Self-Esteem. TEACHER MAGAZINE.

Wilt, J. (1979). You're One-Of-A-Kind. WORD, INC.

Wolcott, L. (1991, April). Relationships: The Fourth "R". TEACHER MAGAZINE.

MILLBROOK PRESS, INC., 2 Old New Milford Road, Brookfield, CT 06804

1-56294-026-0 Sailboats, Flagpoles, Cranes—Using Pulleys as Simple Machines (Lampton)
1-878841-23-8 Bathtubs, Slides, Rollercoaster Rails—Simple Machines that are Really Inclined Planes (Lampton)
1-878841-24-6 Marbles, Roller Skates, Door Knobs—Simple Machines that are Really Wheels (Lampton)
1-878841-22-X Seesaws, Nutcrackers, Brooms—Simple Machines that are Really Levers (Lampton)

FRANKLIN WATTS (Orchard Books), 5450 N. Cumberland Ave., Chicago, IL 60656

0-531-14183-7 Air and Flying (Taylor)
0-531-14185-3 Sound and Music (Taylor)
0-531-14186-1 Structures and Materials (Taylor)
0-531-14184-5 Wind and Weather (Taylor)

ANATOMICAL CHART COMPANY (Barebones Books Division), 8221 Kimball Ave., Skokie, IL 60076

Everyday Things and How They Work (Steve Parker)
Steve Caney's Invention Book (Steve Caney)
Clocks (Bernie Zubrowski)
Wheels at Work (Bernie Zubrowski)
Balloons (Bernie Zubrowski)
Blinders and Buzzers (Bernie Zubrowski)
Tops (Bernie Zubrowski)
Messing Around with Drinking Straw Construction (Bernie Zubrowski)

EDC PUBLISHING (Division of Ed. Development Corp.), P.O. Box 470663 Tulsa, OK 74147

Finding Out About Things That Go (Usborne/Hayes)
How Machines Work (Rawson/King)
How Things are Built (Usborne Explainers)
How Things are Made (Usborne Explainers)
Things on Wheels (Usborne Explainers)
Things That Float (Usborne Explainers)
Things That Fly (Usborne Explainers)
Things That Go (Usborne Explainers)
Things at Home (Usborne Explainers)

TEACHERS LABORATORY, INC., P.O. Box 6480, Brattleboro, VT 05301-6480

0-7501-0032-X Design and Technology Through Problem Solving (Robert Johnsey)
P086020-197X How Machines Work (Rawson/King)
P07460-02785 How Things are Built (Usborne Explainers)
P07460-02769 How Things are Made (Usborne Explainers)
P07460-00901 Things on Wheels (Usborne Explainers)
P07460-01029 Things That Float (Usborne Explainers)
P07460-01045 Things That Fly (Usborne Explainers)
P086020-4936 Things That Go (Usborne Explainers)
P086020-5010 Things at Home (Usborne Explainers)

APPENDIX C

EVALUATION FORM

Please feel free to share with us
your successes and recommendations.

TEACHER EVALUATION OF TECHNOLOGY LEARNING ACTIVITY (TLA)

TLA Title: _____

1. Before trying this activity, did you introduce your students to the problem solving process?
   yes _____ no _____

2. Did you follow the design brief and other plans as outlined in the TLA?
   yes _____ no _____

3. If no, what did you do differently and was it successful.

4. Were you able to effectively incorporate your grade-level objectives?
   yes _____ no _____

5. How did the students react to this TLA activity?

6. Did the students follow through with documentation? yes _____ no _____

7. Would you try this activity again? yes _____ no _____

8. What would you do differently next time?

RETURN TO: Ms. Joyce J. Maehrlein, Supervisor
Business/Technology Education
Randolph High School
Millbrook Avenue
Randolph, New Jersey 07869

APPENDIX D

BLOOM'S TAXONOMY

BENJAMIN S. BLOOM'S TAXONOMY

Knowledge

Ability to remember, recognize, or recall facts, names, places, trends, methods, sequence, categories and previously learned generalizations or theories.

Comprehension

Ability to know what is being communicated. It contains three sub-categories

1. Translation: Changing information into one's own words.
2. Interpretation: Reordering ideas and establishing of relationships.
3. Extrapolation: Making appropriate inferences based on given data.

Application

Ability to transfer learning to solve problems by remembering and applying concepts, generalizations and appropriate skills with little or no direction.

Analysis:

Ability to breakdown an idea into its component parts and examine the relationship or organization of the parts to the whole.

Synthesis:

Ability to put together parts to form a whole, to solve a problem using creative thinking that produces an end result no clearly there before.

Evaluation:

Ability to make a judgement or assessment of good or bad, right or wrong, etc. According to external or internal sources.

Section II • K-2

TELS

TEACHING ESSENTIAL LIFE SKILLS

RANDOLPH TOWNSHIP SCHOOLS
RANDOLPH • NEW JERSEY

PROCEDURES FOR GRADES K-2 ACTIVITIES

Developmentally, the children in these grades cannot abstract. Therefore, the usual procedure of brainstorming ideas and analyzing potential effectiveness of alternative solutions will not be appropriate at these grade levels. The more concrete thinking of these students requires that they manipulate materials and develop their models first, then document what they have done. Documentation usually consists of both narrative and descriptive drawings. Knowing the ability level of your students can help you determine how much narrative they can handle and how much detail you can expect in their drawings.

Remember as you work through these TLAs or develop your own, that the necessary components of technology education include:

1. Developing open-ended activities (TLAs).
2. Following the problem solving process.
3. Documenting the process from beginning to end of each activity.
4. Incorporating technological content.
5. Meeting established grade-level objectives.

It is suggested that each kindergarten student develop a TECHNOLOGY JOURNAL. At the conclusion of each TLA, the student prepares his/her documentation in their individual technology journal. This allows the student and the teacher to see growth over the year.

Although the TLAs that follow note the grade level at which they were field tested, any TLA can be modified to be appropriate for other grade levels. Feel free to experiment!

NOTE: Copy masters for problem solving models, student documentation sheets, and suggested evaluative criteria for the projects and documentation appear in Appendix A of the PROGRAM DESCRIPTION section of this document.

TABLE OF CONTENTS
TECHNOLOGY LEARNING ACTIVITES

EMPHASIS: GRADE	TITLE	LA	MATH
K	Boats that Float	•	
	Transportation	•	
	The Three Little Pigs (Structures)	•	
	Jack in the Beanstalk	•	
	Color Purple, Initial Consonant P	•	
	Geometry (Shapes)		•
	Geometry and Manipulative Math		•
	Pattern Recognition		•
1	Craft/Supply Kit	•	
	Homes and Shelters	•	
	Structure to House a Word Family	•	
	Dot-to-Dot Technology Devices		•
	Clocks and Telling Time		•
	Robots and Geometry		•
2	Colonial Times—Pilgrims	•	
	Creative Writing—Super Hero Puppets	•	
	Creating Original Musical Instruments	•	
	Creature Clocks		•
	Money Skills—Starting a Business		•
	Coordinate Pattern Puzzles of Technological Devices		•

GRADE K

TECHNOLOGY · LEARNING · ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
LANGUAGE ARTS	BOATS THAT FLOAT	SCIENCE	BETTY SNYDER BARBARA FARVER CAROL LUTCZA ARLENE PECORARO

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Designing and building a boat that will float using assigned materials.
2. Collaborating with others in making a decision.
3. Observing and describing change.
4. Selecting the appropriate materials.
5. Learning a poem about vehicles.
6. Enriching vocabulary.
7. Document the design process.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Design and create a boat that will float using assigned materials.

RESOURCES:

Time (how much is needed)
Approx. 45 min. to 1 hour.

Energy (such as batteries or human)
Human

People (how many in each group)
Individual or groups of two.

Knowledge (where can it be found)
Previous knowledge and teacher-led discussions.
MY PICTIONARY (Scott-Foresman)
HERE WE ARE (Scott Foresman)

Material (supplies allowed to be used)
Plasticine, walnut shells, paper, toothpicks, soap (travel bars), orange peels, styrofoam peanuts, paper, plasticine, marshmallows, and feathers.

Capital (how much money will it cost)
Cost of plasticine and marshmallows.

Tools and Equipment
Scissors

TEACHER PREPARATION

Background:
Prior to this activity students will have been introduced to the concept of floating in the book HERE WE ARE, Scott Foresman, pp.326-327.

The teacher begins the lesson by having the students look at various types of boats in MY PICTIONARY by Scott Foresman. The teacher also has some toy boats to share with the students.

Lesson Introduction:

How many of your parents have a boat at home? What do they use the boat for? Can you think of other types of boats? (tugboat, sailboat, cruise ship, tanker) What are these boats used for? Why do boats float? Will a rock float? Why not? What is the difference between a rock and a boat that allows one to float? Today we are going to experiment with different materials to see if they can float.

Lesson Plan:

1. Follow-up to theme of Jobs and Transportation Unit.
2. Use poem BIG YELLOW DUMP TRUCK.
3. Discuss types of boats.
4. STRESS the words appearance and description.

Progress Checkpoints:

1. Check students are on task during construction.

LESSON GRADE-LEVEL OBJECTIVES:

1. Develop logical, sequential thinking.
2. Develop the ability to interpret, analyze, synthesize, and evaluate information.
3. Predicting outcomes.
4. Problem solving skills.

INTERDISCIPLINARY POSSIBILITIES:

Writing

Documentation in technology journal.

Reading

The children will read and listen to stories about boats that they build.

Vocabulary

Read the word: boat

Rhyming word: float

Understand: ship, ferry, tugboat, sailboat, rowboat, cruise ship

Math

Understanding capacity and comparison of size and shapes.

Science

Weight

Understand sink and float

Social Studies

Type of boats and what they do.

Career Awareness

Problem solving, working cooperatively, and self esteem.

Computers

None

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify, evaluate, select, and process resources to create and improve technological systems.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Identify and demonstrate the technological design/problem-solving skills and processes when developing solutions to problems.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.
- Demonstrate group membership skills.

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe how choices are made.
- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.

GRADE K

TECHNOLOGY · LEARNING · ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
LANGUAGE ARTS	TRANSPORTATION	SCIENCE	ARLENE PECORARO CAROL LUTCZA BETTY SNYDER BARBARA FARVER

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Enriching vocabulary related to transportation and vehicles through discussion.
2. Learning a poem about vehicles.
3. Documenting the design process through drawings.
4. Designing and constructing a Lego vehicle.
5. Testing the vehicle for speed and/or distance on the test ramp.
6. Working cooperatively with a partner.
7. Concept of biggest not necessarily being the best, eg., biggest or largest time number loses.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

You are an automotive designer and have been asked to design a vehicle to go as fast as possible. Design and build a vehicle from Legos that will travel as far as possible.

RESOURCES:

Time (how much is needed)
Approx. 45 min. to 1 hour. (More time needed if children have never worked with Legos.)

Energy (such as batteries or human)
Human

People (how many in each group)
Individual or groups of two.

Knowledge (where can it be found)
Previous reading and discussion.
Books and magazines.
Teacher demonstration on using and manipulating Legos.
MY PICTIONARY, Scott Foresman.

Material (supplies allowed to be used)
Legos, wheels/tires, axles

Capital (how much money will it cost)
None (cost of Legos if not available)

Tools and Equipment
Any ramp will suffice for distance testing.
Computerized testing ramp built by technology students in grade 8.
(Borrowed from high school or middle school for the day.)

TEACHER PREPARATION

Background:
Teacher has students look at various types of vehicles in MY PICTIONARY (Scott Foresman).

Lesson Introduction:
Does anyone know what a vehicle is or what a vehicle does? Answer: A device that carries passengers, goods, or equipment.

Can you give me an example of a vehicle you are familiar with (car, bus, truck). What do these vehicles have in common? How are they different?

Today we are going to have the opportunity to build a special type of vehicle.

Lesson Plan:
1. Listen to the poem BIG YELLOW DUMP TRUCK (Scott Foresman) or other stories about vehicles.
2. Look at pictures of vehicles, bring in pictures of vehicles from home, describe vehicles they have been in.
3. Draw and "spell" pictures of favorite vehicle.
4. Discuss what give vehicles the power to go.
5. Teacher introduces the design brief and asks students to sketch ideas.
6. Using Legos, wheels and axles, children build a vehicle.
7. Children will test their vehicle on the ramp and evaluate their results.
8. After a discussion on types of modifications children would make if they could, let children modify their cars and test their modified cars again with a second evaluation.

Progress Checkpoints:
1. Check students are on task during construction.

LESSON GRADE-LEVEL OBJECTIVES:

1. Listening for details
2. Fine motor development
3. Eye-hand coordination
4. Cooperating with others
5. Research skills
6. Problem solving
7. Critical thinking

INTERDISCIPLINARY POSSIBILITIES:

Writing

Documentation in Technology Journal.
Children write in technology journal the names of favorite vehicles under the vehicle they draw.

Reading

The children read and listen to stories they have written about vehicles.
The children read and listen to other stories about vehicles.
Read/Listen/Create stories about vehicles.

Vocabulary

Read the word: vehicle
Read the word for various vehicles: car, dump truck, helicopter, van, rocket, boat, ship
Understand: gravity, friction

Math

Measure distance traveled.
Read the computer for speed of their own vehicle.

Science

Inclined plane (ramp)
Discussion and comparisons of speed—more/less, faster/slower.
Understand wheels, speed.

Social Studies

History of transportation.

Career Awareness

Design concepts, problem solving, cooperative learning, and self esteem.

Computers

OPTIONAL: Computer ramp for speed testing.

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify, apply, and evaluate technological systems to solve problems.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Identify and demonstrate the technological design/problem-solving skills and processes when developing solutions to problems.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.

GRADE K

TECHNOLOGY-LEARNING-ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
LANGUAGE ARTS	THE THREE LITTLE PIGS	SOCIAL STUDIES	ARLENE PECORARO CAROL LUTCZA BETTY SNYDER BARBARA FARVER

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Being able to make a prediction.
2. Inferring information.
3. Working cooperatively.
4. Making an original structure.
5. Documenting the design process.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:
The Big Bad Wolf is blowing down the homes of the Three Little Pigs.
Design and build a new strong house for the three little pigs using new and different materials.

RESOURCES:

Time (how much is needed)
Approx. 45 min. to 1 hour

Energy (such as batteries or human)
Human

People (how many in each group)
Groups of two or three

Knowledge (where can it be found)
Story, THE THREE LITTLE PIGS.
Pictures of homes.
MY PICTIONARY (Scott Foresman)

Material (supplies allowed to be used)
Toothpicks, paper, small blocks, plasticine, straw, twigs, lincoln logs, and yarn.

Capital (how much money will it cost)
Cost of plasticine.

Tools and Equipment
Scissors

TEACHER PREPARATION

Background :
This activity would be an enhancement to the story "The Three Little Pigs" (found in HERE WE ARE, Scott Foresman Reading Series).

Lesson Introduction:
Recall the story of the "Three Little Pigs" and discuss the different types of homes the pigs lived in. Teacher shows examples of homes from "MY PICTIONARY" Scott Foresman.

Teacher discusses the different materials used in building homes.

Today we are going to have the opportunity to work with different materials while designing and building a home for one of the three little pigs.

Lesson Plan:
1. Recall the story of the THREE LITTLE PIGS.
2. Discussion of homes in the story.
3. Look at MY PICTIONARY for various structures.
4. Discuss types of materials used in homes.

Progress Checkpoints:
1. Check students are on task during construction.

LESSON GRADE-LEVEL OBJECTIVES:

1. Demonstrate growth in the ability to listen for details.
2. Recall specifics.
3. Cooperate with others.
4. Problem solve.

INTERDISCIPLINARY POSSIBILITIES:

Writing

Documentation in Technology Journal.

Reading

The children will read and listen to their small books about THE THREE LITTLE PIGS.

Vocabulary

Read the word: house and build.
Read the title: The Three Little Pigs

Math

Recognize that number word three is the same as numeral 3.

Science

Wind blowing down the house.

Socal Studies

Different types of homes.

Career Awareness

Problem solving, design concepts, cooperation.
Construction workers.

Computers

None

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify, evaluate, select, and process resources to create and improve technological systems.
- Use an integrated approach to solving problems.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Identify and demonstrate the technological design/problem-solving skills and processes when developing solutions to problems.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.

Skills to interact with others (COMPETENCY II)

- Identify how people are unique.
- Demonstrate effective skills for interacting with others.
- Demonstrate group membership skills.

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe how choices are made.
- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.
- Describe how personal beliefs and attitudes effect decision-making.
- Describe how decisions affect self and others.

GRADE K

TECHNOLOGY · LEARNING · ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
LANGUAGE ARTS	JACK IN THE BEANSTALK	VOCABULARY AND LETTER RECOGNITION	BARBARA FARVER CAROL LUTCZA BETTY SNYDER ARLENE PECORARO

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Designing and building a beanstalk.
2. Documenting the process in Technology journal.
3. Using new vocabulary words.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Design and build the tallest free-standing beanstalk.

RESOURCES:

Time (how much is needed)
One class period of 45-60 minutes.

Energy (such as batteries or human)
Human

People (how many in each group)
Groups of two

Knowledge (where can it be found)
Previous learning and discussion of measurements in non-standard units.

Material (supplies allowed to be used)
Green construction paper(10 sheets each group).
Masking tape.

Capital (how much money will it cost)
None

Tools and Equipment
Scissors

TEACHER PREPARATION

Background:
This activity would be an enhancement to the story of JACK IN THE BEANSTALK.

Lesson Introduction:
After reading the story the teacher discusses with the children the idea of "tall things." The teacher uses this discussion to introduce" opposites" (tall-short, big-small). Students are then encouraged to go around the room and measure bean plants, the amaryllis, and other tall items using non-standard measuring units. Teacher introduces the problem.

Today we are going to have the opportunity to build something very tall.

Lesson Plan:
1. Read and discuss the story JACK IN THE BEANSTALK.
2. Discuss the concepts of taller/shorter and measuring. Allow students to measure things.
3. Introduce the problem.
4. Construction

Progress Checkpoints:
1. Informal checks throughout construction.

LESSON GRADE-LEVEL OBJECTIVES:

1. Recognize when two objects are the same height/different height.
2. Identify taller or shorter of two objects.
3. Compare and contrast.
4. Use vocabulary of taller and shorter.
5. Measure objects using non-standard units of measure.

INTERDISCIPLINARY POSSIBILITIES:

Writing

Documentation in Technology Journal.

Reading

Reading, listening, and discussing JACK IN THE BEANSTALK.

Vocabulary

tallest, shortest, height

Math

Measure objects using non-standard units of measure.

Science

Plant growth

Social Studies

Look at pictures of tall structures, (Leaning Tower of Pisa, Twin Towers, electrical towers.

Career Awareness

Problem-solving skills, self esteem, and confidence building.

Cooperative learning.

Computers

ARITHMETIC CRITTERS (MECC software)

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Identify and demonstrate the technological design/problem-solving skills and processes when developing solutions to problems.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.

Skills to interact with others (COMPETENCY II)

- Identify how people are unique.
- Demonstrate effective skills for interacting with others.
- Demonstrate group membership skills.

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe how choices are made.
- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.

GRADE K

T E C H N O L O G Y - L E A R N I N G - A C T I V I T Y

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
LANGUAGE ARTS	COLOR PURPLE INITIAL CONSONANT P	WRITING SKILLS	BARBARA FARVER CAROL LUTCZA ARLENE PECORARO BETTY SNYDER

SPECIFIC LEARNING ACTIVITIES:

By the end of this project, each student will have accomplished:

1. Designing and building a "People Purple Eater."
2. Documenting the process in the Technology Journal.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Create a PURPLE PEOPLE EATER with one horn, one eye, and the ability to fly.

RESOURCES:

Time (how much is needed)
Approx. 45 min. to 1 hour

Energy (such as batteries or human)
Human

People (how many in each group)
Individual

Knowledge (where can it be found)
Song and teacher-led discussion (Purple People Eater)

Material (supplies allowed to be used)
Song on tape: PURPLE PEOPLE EATER, one sheet of 18" x 24" PURPLE paper,crayons, glue, one sheet of mounting paper.

Capital (how much money will it cost)
None

Tools and Equipment
Scissors

TEACHER PREPARATION

Background:

This activity enhances of Unit 2, HERE WE ARE, Scott Foresman, dealing with color recognition and letter recognition (upper and lower case "P").

This activity will develop auditory discrimination of initial consonant sounds, letter "P".

Similar activities can be developed for other initial consonants.

Lesson Plan:

1. Listen to the song PURPLE PEOPLE EATER—let children dance/move about.
2. Sit and listen to the song again for the words and details.
3. Talk about what they heard, talk about how it would look, brainstorm how it could fly.
4. Stress the words appearance and description.

Progress Checkpoints:

1. Check students are on task during construction.

LESSON GRADE-LEVEL OBJECTIVES

1. Listening for details
2. Geometric shapes
3. Auditory memory
4. Creative movement
5. Distinguish between realism and fantasy
6. Problem solving
7. Creative thinking

INTERDISCIPLINARY POSSIBILITIES:

Writing

On mounting paper, teacher writes heading _UR_LE _EO_LE EATER and students fill in the P's. Documentation in Technology Journal.

Reading

Reading the word PURPLE.

Vocabulary

Increasing vocabulary by learning color word and using words APPEARANCE and DESCRIPTION.

Math

This activity could be developed into a lesson on shapes—shapes cut from purple paper and used to create P.P.E.

Science

Concept of flying

Social Studies

None

Career Awareness

Self esteem and problem solving.

Computers

PHONICS—PRIME TIME, Initial Consonants (MECC software in labs).

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Identify and demonstrate the technological design/problem-solving skills and processes when developing solutions to problems.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe what can be learned from making mistakes.
- Identify alternatives in decision-making situations.

GRADE K

TECHNOLOGY - LEARNING - ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
MATH	GEOMETRY (SHAPES)	SCIENCE	BARBARA FARVER CAROL LUTCZA ARLENE PECORARO BETTY SNYDER

SPECIFIC LEARNING ACTIVITIES:

By the end of this project, each student will have accomplished:

1. Being able to identify spheres, cylinders, and cubes.
2. Learning about bridges.
3. Documenting the design process through drawings.
4. Designing and constructing a bridge for strength.
5. Working cooperatively.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Design and build a bridge to hold an 8 oz. can of soup.

CRITERIA: Bridge must span 12 inches.

RESOURCES:

Time (how much is needed)

Approx. 45 min. to 1 hour

Energy (such as batteries or human)

Human

People (how many in each group)

Groups of 22

Knowledge (where can it be found)

Reference math book.
Previous discussions.
MY PICTIONARY, Scott Foresman.
Technology books related to bridges.

Material (supplies allowed to be used)

NOTE: When selecting materials for this activity be certain that no one item by itself can span the 12" distance.

Various sized small cardboard boxes, paper towel and toilet paper tubes, paper, masking tape, straws, yarn, styrofoam trays, oaktag, popsicle sticks. 8 oz. can of soup, glue, and masking tape.

Capital (how much money will it cost)

None

Tools and Equipment

Scissors

TEACHER PREPARATION

Background:

Teacher would use this as a culminating activity of the Introduction to Geometry Unit.

Lesson Introduction:

Teacher reads the traditional folk story THREE BILLY GOATS GRUFF to students.

Lesson Plan:

1. Involve students with three-dimensional experiences pertaining to geometric solid figures.
2. Look at pictures of bridges.
3. Describe bridges.
4. Brainstorm about what makes bridges strong.
5. Teacher introduces design and children sketch ideas.

Progress Checkpoints:

1. Check students are on task during construction.

LESSON GRADE-LEVEL OBJECTIVES

1. Identify solid shapes that are ball shaped (spheres), can shaped (cylinders), and box shaped (cubes).
2. Identify circles, triangles, and squares.
3. Identify halves.
4. Measure length and distance using nonstandard units.

INTERDISCIPLINARY POSSIBILITIES:

Writing

Documentation in Technology Journal.

Reading

Listen to stories about bridges.
Make a BIG BRIDGE BOOK from pictures at home.
THREE BILLY GOATS GRUFF, traditional folk tale.

Vocabulary

Ball, triangle, half, box, circle whole, can, square, shape, and rectangle

Math

Recognize the four shapes and reproduce triangles, squares, circles, rectangles.

Science

Understand weight.

Social Studies

History of bridges.

Career Awarness

Problem-solving skills, self esteem, and confidence building.

Computers

OPTION: PICTURE CHOMPERS and PATTERNS software programs.

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify, evaluate, select, and process resources to create and improve technological systems.
- Evaluate the impact of technology on the individual, society, and the environment.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Research and evaluate the past and apply decision-making skills for shaping values.
- Identify and demonstrate the technological design/problem-solving skills and processes when developing solutions to problems.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.
- Demonstrate group membership skills.

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.

GRADE K

TECHNOLOGY · LEARNING · ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
MATH	GEOMETRY AND MANIPULATIVE MATH	SOCIAL STUDIES	BARBARA FARVER CAROL LUTCZA ARLENE PECORARO BETTY SNYDER

SPECIFIC LEARNING ACTIVITIES:

By the end of this project, each student will have accomplished:

1. Identifying a geometric shape within a design.
2. Designing and building a floor tile pattern.
3. Documenting in technology journal.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Design and create a floor tile pattern containing a triangle, rectangle, or square that will fit within a 12" x 12" sheet of construction paper.

RESOURCES:

Time (how much is needed)
Approx. 40-50 minutes

Energy (such as batteries or human)
Human

People (how many in each group)
Individual

Knowledge (where can it be found)
From previous manipulative experiences.
From observing patterns within their environments.

Material (supplies allowed to be used)
Plastic pattern blocks, markers and crayons, and construction paper.
Experience chart

Capital (how much money will it cost)
None

Tools and Equipment
Camera

TEACHER PREPARATION

Background:

This is a culminating activity to the unit on geometry (Chapter 9, Addison-Wesley Mathematics).

The children will have had open-ended experiences using pattern blocks. Ask students to give examples of places where they have seen patterns (quilts, stained glass, floor tiles, etc.).

Lesson Introduction:

Today we are going to have the opportunity to make a pattern for a floor tile.

Lesson Plan:

1. Discussion on places where patterns are found.
2. Introduce the problem.
3. Students work on tile patterns.

Progress Checkpoints:

1. Check students are on task during construction.

LESSON GRADE-LEVEL OBJECTIVES

1. Fine motor development.
2. Awareness of geometric shapes.
3. Ability to construct geometric shapes.
4. Opportunity to use manipulative materials.
5. Eye-hand coordination.
6. Trial and error skills.

INTERDISCIPLINARY POSSIBILITIES:

Writing

Write a story (tell a story) about their shapes.
Re-copy tile pattern in technology journal.
Have students tell you the shapes they used.
Documentation in Technology Journal.

Reading

None

Vocabulary

Square, triangle, rectangle

Math

See lesson objectives

Science

None

Social Studies

Discussion of quilts and stained glass windows.
Patterns used by native americans.

Career Awareness

Problem-solving skills, self esteem, and confidence building.

Computers

OPTION: PICTURE CHOMPERS and PATTERNS software programs.

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify, evaluate, select, and process resources to create and improve technological systems.
- Evaluate the impact of technology on the individual, society, and the environment.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Research and evaluate the past and apply decision-making skills for shaping values.
- Identify and demonstrate the technological design/problem-solving skills and processes when developing solutions to problems.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.
- Demonstrate group membership skills.

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.

GRADE K

TECHNOLOGY-LEARNING-ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
MATH	PATTERN RECOGNITION	SOCIIAL STUDIES NATIVE AMERICANS	BARBARA FARVER CAROL LUTCZA ARLENE PECORARO BETTY SNYDER

SPECIFIC LEARNING ACTIVITIES:

By the end of this project, each student will have accomplished:

1. Being able to recognize patterning.
2. Design and build a necklace.
3. Solving a problem.
4. OPTION: Design and make a paper chain and link all the childrens' chains together.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Design a linear pattern and use that pattern to create a necklace.

RESOURCES:

Time (how much is needed)

Two half-hour blocks over two days.

Energy (such as batteries or human)

Human

People (how many in each group)

Individual

Knowledge (where can it be found)

Culminating activity based on teacher lessons on patterns and stringing.

Material (supplies allowed to be used)

Macaroni (ziti), colored paper strips, strong yarn or shoelaces, plastic needles, tape, glue, paint.
OPTION: Learning links from Creative Publications or wooden beads.

Capital (how much money will it cost)

Cost of noodles.

Tools and Equipment

Scissors and painting equipment.

TEACHER PREPARATION

Background:

This is a culminating activity for the unit on linear patterns(Chapter 2, Addison Wesley).

Before Thanksgiving discuss Native Americans with your students. Show examples of necklaces and discuss how necklaces can be made from various materials.

Lesson Introduction:

Today we are going to have the opportunity to create a necklace that shows a pattern.

Lesson Plan:

1. Discussion on Native Americans and necklace making
   DAY 1: Introduce the problem and paint noodles (paint to dry overnight).
   DAY 2: Build necklace.
   OPTION May use learning links manipulatives (Creative Publications) or colored wooden beads

Progress Checkpoints:

1. Check students are on task during construction

LESSON GRADE-LEVEL OBJECTIVES

1. Fine motor development
2. Pattern recognition
3. Eye-hand coordination
4. Copy and extend a linear pattern

INTERDISCIPLINARY POSSIBILITIES:

Writing
Documentation in Technology Journal.

Reading
Stories related to Native Americans.

Vocabulary
Native American, patterning

Math
Counting and patterning

Science
Natural dyes (spinach, beets, cranberries, and onion skins).

Social Studies
Native American and other cultures

Career Awareness
Problem-solving skills, self esteem, and confidence building.

Computers
OPTION: PICTURE CHOMPERS and PATTERNS software programs.

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Research and evaluate the past and apply decision-making skills for shaping values.
- Identify and demonstrate the technological design/problem-solving skills and processes when developing solutions to problems.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:
Knowledge of the importance of self-concept (COMPETENCY I)
- Demonstrate a positive attitude about self.

Skills to interact with others (COMPETENCY II)
- Demonstrate effective skills for interacting with others.
- Demonstrate group membership skills.

CAREER PLANNING:
Understanding how to make decisions (COMPETENCY IX)
- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.

GRADE 1

TECHNOLOGY - LEARNING - ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
LANGUAGE ARTS	CRAFT SUPPLY KIT	ORGANIZATIONAL SKILLS	DOROTHY GUSTAVSON CHRISTINE BREMBS SUE GRECCO JUDY RETTENMEYER

SPECIFIC LEARNING ACTIVITIES:

By the end of this project, each student will have accomplished:

1. Designing and building a container for general supplies.
2. Documenting the design process.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

You need to carry your school supplies with you from class to class every day, and it is easy for things to get misplaced or lost.

Design and build something that will hold supplies for math, reading, and homeroom.

CRITERIA:
1. **Design must make efficient use of materials.**
2. **Your name must be clearly visible on the container.**

RESOURCES:

Time (how much is needed)
Four days, 20-30 minutes daily.

Energy (such as batteries or human)
Human

People (how many in each group)
Individual

Knowledge (where can it be found)
Teacher led discussion.

Material (supplies allowed to be used)
Shoe box, tupperware box, paint, yarn, material, markers, glitter, construction paper, cardboard, and any other material as PRE-APPROVED by the instructor.

Capital (how much money will it cost)
None

Tools and Equipment
paint brushes, scissors, ruler

TEACHER PREPARATION

Background:

Early in the year, students are given a list of general supplies they will need to bring with them to language arts and math class every day. Students need to be able to store and transport these supplies from class to class.

Lesson Introduction:

We have learned that technological devices can improve our lives. For example a drinking glass holds water, a shoe rack organizes our shoes, and a book shelf holds and organizes our books. Can you think of other technological devices that organize things for us? Today we are going to have the opportunity to design and build an organizer.

Lesson Plan:

DAY 1:
1. Teacher explains the need for keeping supplies for math, reading, and homeroom organized.
2. Teacher introduces the design brief.
3. Students begin brainstorming ideas.

DAY 2: Students finalize designs and begin construction.

DAY 3-4: Construction

Progress Checkpoints:

1. Teacher checks designs before any work is started.
2. Informal checks throughout the process.

LESSON GRADE-LEVEL OBJECTIVES

1. Readiness skills—following directions
2. Study skills
3. Vocabulary
4. Develop problem solving skills

INTERDISCIPLINARY POSSIBILITIES:

Writing

Writing skills will be developed through the documentation and writing name on box. See lesson objectives.

Reading

Recognizing their own name

Vocabulary

Organizer, container

Math

Estimation and proportioning skills.

Science

None

Social Studies

None

Career Awareness

Preparedness for class, organization of materials, replenishment of resources

Computers

None

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify, evaluate, select, and process resources to create and improve technological systems.
- Use an integrated approach to solving problems.
- Evaluate the impact of technology on the individual, society, and the environment.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Identify and demonstrate the technological design/problem-solving skills and processes when developing solutions to problems.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.

GRADE 1

TECHNOLOGY - LEARNING - ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
LANGUAGE ARTS	HOMES AND SHELTERS	SCIENCE	DOROTHY GUSTAVSON CHRISTINE BREMBS SUE GRECCO JUDY RETTENMEYER

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Designing and building a place for the polar bear to sleep and stay warm.
2. Working together to brainstorm a list of appropriate materials.
3. Documenting the design process.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

According to the poem, Polar Bear has no place where he can be warm when he sleeps at night.

Design and build a place for polar bear to sleep and stay warm at night.

CRITERIA: 1. Design must make efficient use of materials.

RESOURCES:

Time (how much is needed)
Two periods of approximately 30 minutes.

Energy (such as batteries or human)
Human

People (how many in each group)
Cooperative learning groups of two or three.

Knowledge (where can it be found)
Student knowledge of arctic environment, reference books about polar bears and cold environments.

Material (supplies allowed to be used)
Construction paper, cotton, scraps of materials, markers, glue, styrofoam bits, and other materials suggested through brainstorming session and PREAPPROVED by the teacher.

Capital (how much money will it cost)
None

Tools and Equipment
scissors and stapler

TEACHER PREPARATION

Background:

Upon completion of reading the story "Duck Wants to Play" Pre-Primer 3 and discussion for comprehension, read aloud the poem Polar Bear. Think about where polar bears sleep and what he sees when he wakes up at night.

Discuss with students the need for shelter and how a secure shelter makes us feel. This could lead into a discussion of the homeless.

Lesson Plan:

DAY 1: 1. Read and discuss the poem Polar Bear by William Jay Smith (ATTACHED).
2. Discussion on shelters and feelings associated with having a home.
3. Introduce the problem and have students begin brainstorming ideas of materials for making shelter.

DAY 2: Construction

Progress Checkpoints:

1. Teacher checks designs before any work is started.
2. Informal checks throughout construction.

LESSON GRADE-LEVEL OBJECTIVES:

1. Appreciation of poetry
2. Recognition of rhyme and rhythm
3. Distinguishes between realism and fantasy
4. Develop problem solving skills

INTERDISCIPLINARY POSSIBILITIES:

Writing
Writing skills will be developed through the documentation and writing polar bear. See lesson objectives

Reading
After brainstorming, reading names of materials listed on chalkboard.

Vocabulary
Polar, arctic

Math
None

Science
Scientific knowledge of arctic regions and polar bears.

Social Studies
Use a map to find where polar bears live.

Career Awareness
Problem solving, cooperative learning

Computers
None

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify, evaluate, select, and process resources to create and improve technological systems.
- Use an integrated approach to solving problems.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Identify and demonstrate the technological design/problem-solving skills and processes when developing solutions to problems.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:
Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.
- Demonstrate group membership skills.
- Demonstrate awareness of different cultures, lifestyles, attitudes, and abilities.

CAREER PLANNING:
Understanding how to make decisions (COMPETENCY IX)

- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.

Awareness of career planning process (COMPETENCY XII)

- Describe the importance of planning.

Polar Bear

by William Jay Smith

The Polar Bear never makes his bed;
He sleeps on a cake of ice instead.
He has no blanket, no quilt, no sheet
Except the rain and snow and sleet.
He drifts about on a white ice flow
While cold winds howl and blizzards blow
And the temperature drops to forty below.
The Polar Bear never makes his bed;
The blanket he pulls up over his head.
Is lined with soft and feathery snow.
If ever he rose and turned on the light
He would find a world of bathtub white,
And icebergs floating through the night.

GRADE 1

TECHNOLOGY · LEARNING · ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
LANGUAGE ARTS	STUCTURE TO HOUSE A WORD FAMILY		SUSAN GRECCO DOROTHY GUSTAVSON JUDY RETTENMEYER

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Building words out of word families and brainstorming ideas for a home for their word family based on words that can be made, eg., AT—bat (cave), cat (basket).
2. Designing and building a word family structure from clay.
3. Making initial constant, digraph, and initial blend cards to go with word family card to make as many words as possible.
4. Preparing documentation of the process.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Design and build a structure from clay to house a word family, and prepare initial consonant, digraph, and initial blend cards to make words from the word family.

CRITERIA: 1. Home must be related to word from the word family.

RESOURCES:

Time (how much is needed)
Four days, 45-60 minutes a day.

Energy (such as batteries or human)
Human

People (how many in each group)
Individual

Knowledge (where can it be found)
Teacher lessons and discussions and prior knowledge of word families.

Material (supplies allowed to be used)
Clay and cardboard for base.
ALTERNATIVE: construction paper

Capital (how much money will it cost)
Cost of clay
OPTION: Fire structures for permanent use.

Tools and Equipment
Popsicle sticks

TEACHER PREPARATION

Background:
Word families will be assigned and brainstorming done through reading groups. This activity can be done toward the end of the year after most word families are introduced, or throughout the year with students building on the ideas of other groups.

Talk about different types of homes before problem is introduced, eg., birds live in nests.

ALTERNATIVE: Use a variety of other materials to form structures.

Lesson Plan:

DAY 1: Give word families to the entire class and have students brainstorm ideas of homes.
DAY 2: Break into reading groups. Teacher assigns word families by having the family on a card. Students plan their homes.
DAY 3: Draw plans for home. Teacher approves plans.
DAY 4: Construction and preparing cards listing initial consonants, digraphs, and initial blends that go with the word family.

Progress Checkpoints:

1. After students decide on their plan.
2. After plans are drawn for the plan prior to construction.
3. Informal checks during construction.

LESSON GRADE-LEVEL OBJECTIVES:

1. Develop word and sentence structure.
2. Present ideas orally.
3. Develop creative dramatic skills.
4. Develop writing skills.

INTERDISCIPLINARY POSSIBILITIES:

Writing

Writing initial consonant, digraph, and initial blend cards to make words from word family card.
Write a story about the structure built.

Reading

Develop reading skills by making words with word cards.

Vocabulary

Review of word families

Math

None

Science

Relating specific word family animals to specific homes.

Social Studies

Families and things that are related to each other.

Career Awareness

Problem-solving skills, confidence building, study skills.

Computers

PRIMETIME PHONICS (MECC software)

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Identify and demonstrate the technological design/problem-solving skills and processes when developing solutions to problems.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.
- Demonstrate group membership skills.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:

Awareness of the benefits of educational achievement (COMPETENCY IV)

- Identify personal strengths and weaknesses in subject areas.

Awareness of the importance of personal responsibility and good work habits (COMPETENCY VII)

- Demonstrate positive ways to performing working activities.
- Demonstrate the ability to work with people who are different from oneself (e.g., race, age, gender).

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.

GRADE 1

TECHNOLOGY-LEARNING-ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
MATH	DOT-TO-DOT TECHNOLOGY AWARENESS	TECHNOLOGY AWARENESS	DOROTHY GUSTAVSON CHRISTINE BREMBS SUE GRECCO JUDY RETTENMEYER

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Designing and drawing a technology-based dot-to-dot picture.
2. Documenting selections.
3. Contributing to a dot-to-dot book to share with others.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Your class has been asked to make a technology dot-to-dot picture to share with other children in your school.

Design and draw an example of technology that can be used for a dot-to-dot picture to be included in the book.

RESOURCES:

Time (how much is needed)
One to two days, 40-60 minutes daily.

Energy (such as batteries or human)
Human

People (how many in each group)
One

Knowledge (where can it be found)
Teacher led discussions, examples of dot-to-dot books in the classroom, and an overlay on the overhead projector.

Material (supplies allowed to be used)
Graph paper, tracing paper, pencils, magic markers, and rulers.

Capital (how much money will it cost)
None

Tools and Equipment
Overhead projector and rulers

TEACHER PREPARATION

Background:

Prior to this activity, students will have been introduced to sequencing, place value, number recognition, and counting skills.

Lesson Introduction:

Technology is everywhere. It affects all people in many ways. Technology is making things. Your chair, the clothes that you wear, and a school bus are all examples of technology.

Technology improves our lives. For example, a light bulb helps us to see better at night. Your house protects you from the elements. Your pencil allows you to write down thoughts and ideas. Can you think of other examples of technology?

Lesson Plan:

DAY 1:
1. Teacher leads a discussion about technology. Teacher and students cite examples of technology which determines what technology is: The application of knowledge to solve needs and wants and extend human capabilities.
2. Students are instructed to neatly sketch an example of technology on graph paper.

DAY 2:
1. Students identify important points and locate them with dots and appropriate numbers.
2. Students place tracing paper over the picture and copy the key points.
3. Teacher collects all pictures to make a dot to dot "Technology Awareness Book" for all students.

Progress Checkpoints:

1. Teacher checks designs selected before any drawing is started.
2. Informal checks throughout the process.

LESSON GRADE-LEVEL OBJECTIVES

1. Basic number skills 1-20
2. Sequencing and place value skills through reading, writing, and ordering two-digit numbers less than 20

INTERDISCIPLINARY POSSIBILITIES:

Writing

Students could make a table of contents for the booklet identifying each piece of technology and numbering the booklet pages.

Reading

Recognizing letters and phonics.
Reading and organizing names of various technological devices.

Vocabulary

Technology, table of contents

Math

See lesson objectives

Science

None

Social Studies

None

Career Awareness

Problem solving skills and confidence building.

Computers

None

TECHNOLOGY EDUCATION PROFICIENCIES

- Evaluate the impact of technology on the individual, society, and the environment.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Research and evaluate the past and apply decision-making skills for shaping values.
- Recognize the evolving, dynamic nature of technology and demonstrate its potential for impacting futures.
- Identify and demonstrate the technological design/problem-solving skills and processes when developing solutions to problems.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.
- Identify personal interests, abilities, strengths, and weaknesses.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.

GRADE 1

TECHNOLOGY · LEARNING · ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
MATH	CLOCKS AND TELLING TIME		CHRISTINE BREMBS SUE GRECCO DOROTHY GUSTAVSON JUDY RETTENMEYER

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Designing and building a clock.
2. Using their clock to set specific times as assigned by the teacher.
3. Designing and building a clock tower.
4. Documenting the design process.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

You have been asked to design a clock and fantasy clock tower for the new town hall.

Design and build a clock and a fantasy clock tower.

RESOURCES:

Time (how much is needed)

Two classes of 45 minutes each.

Energy (such as batteries or human)

Human

People (how many in each group)

Individual

Knowledge (where can it be found)

Teacher lessons and demonstrations, students prior knowledge about clocks.

Material (supplies allowed to be used)

Clock materials: paper plates, paper fasteners, colored paper, and magic markers.

Tower materials: lexiblocks, fit-a-slot builders, clever sticks, and triangle builder.

Capital (how much money will it cost)

Money for paper plates. If manipulatives are not available, they may need to be purchased.

Tools and Equipment

None

TEACHER PREPARATION:

Lesson Introduction:

Structures play an important role in our society. Many times we take structures for granted. For example, when riding on a bridge we always assume it will support our car and all the other vehicles as well. When sitting in the bleachers of a stadium with thousands of other people we take for granted that they can support all that weight.

Structures are not always complex or big like a bridge, skyscraper, or stadiums. Sometimes structures are simple. A milk carton is a type of structure that holds milk. Can you think of any other types of structures?

Today we are going to build a structure that will hold something up.

Lesson Plan:

This activity will reinforce clock skills with your students.

DAY 1:
1. Teacher reviews parts of a clock and how to tell time with students.
2. Teacher introduces the problem of making a clock.
3. Students make clocks.

DAY 2:
1. Teacher introduces the problem of making a structure (tower) for their clocks.
2. Students build the clock tower using manipulatives.

Progress Checkpoints:

1. Children draw a plan of their clock and teacher checks the number spacing.
2. Informal checks throughout construction phase.

LESSON GRADE-LEVEL OBJECTIVES:

1. Identify parts of a clock (minute hands, hour hands, face).
2. Tell time to the hour and half hour.
3. Set their clocks to a time.
4. Counting by fives.

INTERDISCIPLINARY POSSIBILITIES:

Writing
Writing the numbers.

Reading
Reading times and the word o'clock.

Vocabulary
Hour, minute, o'clock, past.

Math
See lesson objectives.

Science
None

Social Studies
None

Career Awareness
Problem-solving skills and confidence building.
Importance of being on time.

Computers
CLOCKWORKS—Design Your Own Clock, Level 4 (MECC software).

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in he development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Recognize the evolving, dynamic nature of technology and demonstrate its potential for impacting futures.
- Identify and demonstrate the technological design/problem-solving skills and processes when developing solutions to problems.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:
Knowledge of the importance of self-concept (COMPETENCY I)
- Demonstrate a positive attitude about self.

Skills to interact with others (COMPETENCY II)
- Identify how people are unique.
- Demonstrate effective skills for interacting with others.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:
Awareness of the importance of personal responsibility and good work habits (COMPETENCY VII)
- Describe the importance of personal qualities (e.g., dependability, promptness, getting along with others) to getting and keeping jobs.
- Describe the importance of cooperation among workers to accomplish a task.
- Demonstrate the ability to work with people who are different from oneself (e.g., race, age, gender).

GRADE 1

TECHNOLOGY · LEARNING · ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
MATH	ROBOTS AND GEOMETRY	SCIENCE AND TECHNOLOGY	CHRISTINE BREMBS SUE GRECCO DOROTHY GUSTAVSON JUDY RETTENMEYER

SPECIFIC LEARNING ACTIVITIES:

By the end of this project, each student will have accomplished:

1. Designing and building a robot from basic geometric shapes.
2. Measuring various parts of the robot using assorted objects.
3. Graphing the number of objects used for measuring various parts of the object.
4. Counting the number of circles, squares, and triangles used to create your robot.
5. Presenting an oral presentation to the class about your robot.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Your parents won't let you play with your friends until you complete all your chores.

Design and build a robot using basic geometric shapes which will complete a chore or task.

OPTION 1: **Two dimensional robot on 12" x 18" sheet of construction paper.**

OPTION 2: **Three dimensional robot using interlocking manipulatives.**

RESOURCES:

Time (how much is needed)
Four 30 minute classes

Energy (such as batteries or human)
Human

People (how many in each group)
Groups of two (cooperative learning)

Knowledge (where can it be found)
Teacher lesson and demonstrations, previous knowledge of geometric shapes.

Material (supplies allowed to be used)
Objects for measuring, graph paper, plain paper, crayons, and assorted manipulative blocks.

Capital (how much money will it cost)
None

Tools and Equipment
None

TEACHER PREPARATION:

Background:
This is a culminating activity for a unit on geometry.

Lesson Introduction:
An emerging field in technology is robotics. Robots can be used to make our jobs easier. Robots complete many jobs which are repetitive, like painting cars on an assembly line, or vacuuming the bottom of a swimming pool. Robots can also do jobs which are dangerous like picking up containers of toxic waste. What are some of the jobs or chores you have to do around your home? Do you think a robot could help you? What do robots look like?

Today we are going to have a chance to design some robots.

Lesson Plan:

DAY 1: 1. Review the four basic geometric shapes with the students.(square,circle,rectangle, and triangle)
2. Introduction to robots.

DAY 2-3: 1. Construction of robot. Students should build the robot on plain paper and when finished trace around the blocks to keep a record of their robot.
2. Students can then begin to fill out attached worksheet.

DAY 4: Create a pictograph

Progress Checkpoints:
1. Informal checks throughout the construction phase.
2. Teacher will check results before students begin to graph.

LESSON GRADE-LEVEL OBJECTIVES

1. Recognize basic geometric shapes
2. Count number of shapes
3. Write corresponding number of shapes
4. Demonstrate the ability to solve a problem

INTERDISCIPLINARY POSSIBILITIES:

Writing

1. Students create a name for their robot.
2. Teacher asks students to answer specific questions about their robot. Example: What chore does your robot do for you?
3. Students write responses.

Reading

Teacher reads materials related to robots with students.

Vocabulary

Robot, chore, technology

Math

See lesson objectives.

OPTION: Design a pictograph or bar graph of objects used.

Science

None

Social Studies

None

Career Awareness

Problem solving skills, cooperative learning (teamwork), and organizational skills.

Computers

Teacher discusses the role computers play in controlling robots.

TECHNOLOGY EDUCATION PROFICIENCIES

- Evaluate the impact of technology on the individual, society, and the environment.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Research and evaluate the past and apply decision-making skills for shaping values.
- Identify, explore, and evaluate career opportunities and leisure time interests associated with technology.
- Recognize the evolving, dynamic nature of technology and demonstrate its potential for impacting futures.
- Identify and demonstrate the technological design/problem-solving skills and processes when developing solutions to problems.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.

Skills to interact with others (COMPETENCY II)

- Identify how people are unique.
- Demonstrate effective skills for interacting with others.
- Demonstrate group membership skills.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:

Awareness of the importance of personal responsibility and good work habits (COMPETENCY VII)

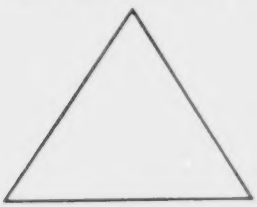
- Demonstrate positive ways to performing working activities.
- Describe the importance of cooperation among workers to accomplish a task.
- Demonstrate the ability to work with people who are different from oneself (e.g., race, age, gender).

ROBOT WORKSHEET

NAME _____ **DATE** _____

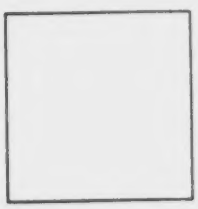
Basic Shapes

Find these shapes in your robot. Write down the number you find.

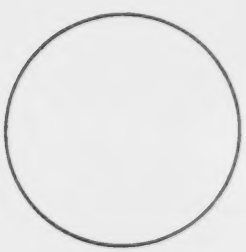


Triangle _____

Rectangle _____



Square _____



Circle _____

Measuring Your Robot

How tall is your robot? _____

How long is the robot's arm? _____

How long is the robot's leg? _____

GRADE 2

TECHNOLOGY · LEARNING · ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
LANGUAGE ARTS	COLONIAL TIMES --PILGRIMS	SOCIAL STUDIES	BERNICE RALLO

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Designing and building a toy using natural materials.
2. Comparing and evaluating natural materials regarding their properties and possible uses.
3. Making an oral presentation explaining their toy.
4. Preparing documentation throughout the process.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to usein preparing their solutions.

PROBLEM/SOLUTION:

You have been transported back in time to the 1600's, which means you have no electricity or Nintendo. In order to have a toy, you must gather natural materials and make something original.

Design and build a toy using natural materials that could be used by a colonial child.

RESOURCES:

Time (how much is needed)

1. 20-30 minutes gathering materials
2. 30-45 minutes construction time

Energy (such as batteries or human)

Human

People (how many in each group)

Groups of two or cooperative learning groups of four (see attached sheets).

Knowledge (where can it be found)

Teacher lessons and discussions, watching the film, MAYFLOWER MOUSE, and prior student knowledge of toys.

Material (supplies allowed to be used)

String, clay, twigs, leaves, pine cones, acorns, and any other natural material.

Capital (how much money will it cost)

Cost of clay

Tools and Equipment

Scissors

TEACHER PREPARATION

Background:

Read a story about Pilgrims to the children and show the film MAYFLOWER MOUSE.

Teacher discusses Pilgrims with the children by asking them to imagine they are Pilgrims—what would it be like?

Lesson Introduction:

Although times have changed dramatically since Europeans first settled on this continent, our needs and desires remain the same. Along with food, shelter, and clothing, most people go to school and\or work and look for some form of entertainment. For young children, this entertainment comes from playing with a favorite toy. Toys can be simple like a ball or frisbee, or complex and require batteries or electricity like Nintendo. In many cases toys mirror the technological advancements of the time period. Let's discuss the technology of the 1600's and the impact it had on life in general and specifically on colonial toys.

Lesson Plan:

1. Teacher reads a story about Pilgrims and shows the film MAYFLOWER MOUSE.
2. Teacher and students discuss Pilgrims.
3. Brainstorm and talk about vocabulary related to Pilgrim life.
4. Teacher introduces the problem.
5. Discuss resources which can be used including the encyclopedia.
6. TIME TOWARD PROBLEM SOLUTION:
   1. 20-30 minutes gathering materials
   2. 30-45 minutes construction time

Progress Checkpoints:

1. After students gather materials and brainstorm ideas, teacher checks documentation.
2. Informal checks will be conducted during the construction phase.

LESSON GRADE-LEVEL OBJECTIVES:

1. Develop word and sentence structure
2. Present ideas orally
3. Develop creative dramatic skills
4. Develop writing skills

INTERDISCIPLINARY POSSIBILITIES:

Writing

1. Writing skills being developed through the documentation.
2. Write a story as if you were a Pilgrim who sailed on the Mayflower.
3. Tell the story of your journey from the beginning of the voyage to the first Thanksgiving.

Reading

Reading comprehension through research on toys and colonial times.

Vocabulary

Terms specific to the unit, names of specific Native Americans, religious freedom, musket.

Math

Measurements and estimating.

Science

Learning about the properties of natural materials.

Social Studies

1. Understand how Pilgrims lived, only able to use natural resources in all of their life's activities.
2. Be familiar with properties of natural materials—when are they useful or inappropriate.
3. Appreciate the difference of life today and how it compares to a pilgrim child's life.

Career Awareness

Toy inventor, getting along with others, confidence building, self esteem, and problem solving.

Computers

None

TECHNOLOGY EDUCATION

- Identify, evaluate, select, and process resources to create and improve technological systems.
- Use an integrated approach to solving problems.
- Evaluate the impact of technology on the individual, society, and the environment.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Research and evaluate the past and apply decision-making skills for shaping values.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.
- Demonstrate group membership skills.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:

Awareness of the benefits of educational achievement (COMPETENCY IV)

- Identify personal strengths and weaknesses in subject areas.

Awareness of the relationship between work and learning (COMPETENCY V)

- Demonstrate effective study and information-seeking habits.

Awareness of the importance of personal responsibility and good work habits (COMPETENCY VII)

- Demonstrate positive ways to performing working activities.
- Demonstrate the ability to work with people who are different from oneself (e.g., race, age, gender).

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.

GROUP EVALUATION (STUDENTS)

Date _____
Task _____

Group Members
1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

How Did Our Group Do? (to be read aloud by teacher if needed)

1. We made sure each person understood. yes ____ no ____
2. We stayed in our group and used quiet voices. yes ____ no ____
3. We finished the task. yes ____ no ____
4. We worked together well. yes ____ no ____
5. We helped each other. yes ____ no ____

Here is one thing our group did very well.

_____
_____
_____
_____
_____

Here is one thing we need to do better next time.

_____
_____
_____
_____
_____

GROUP EVALUATION (TEACHER)

Date _____ Task _____

Group Members

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

How Did the Group Do?

1. Product/learning was:

   Outstanding _____ Acceptable _____ Not acceptable _____

2. Group stayed on task. yes _____ no _____

3. Group members shared. yes _____ no _____

4. Group members took turns. yes _____ no _____

5. Group members supported each other. yes _____ no _____

Additional Comments and Considerations.

_____

_____

_____

_____

_____

_____

_____

_____

_____

GRADE 2

TECHNOLOGY - LEARNING - ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
LANGUAGE ARTS	CREATIVE WRITING -- SUPER HERO PUPPETS	SOCIAL STUDIES AND SCIENCE	BERNICE RALLO

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Creating an original super hero story.
2. Designing and constructing a super hero puppet with moveable parts as depicted in their original story.
3. Preparing documentation throughout the process.
4. Making an oral presentation to the class of their original story using their puppet.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

There are many problems in the world, and people are struggling to overcome the hard times and make their own lives and the lives of their loved ones better. If you could call on a super hero to make things better in the world, what would you ask of this super person.

Design and construct a super hero puppet with moveable parts as depicted in your original story.

CRITERIA: 1. Character must use a power to solve a problem.

2. Character must have a weakness.

RESOURCES:

Time (how much is needed)

1. 20-25 minutes: Introduction lesson and brainstorming words and ideas about super heroes.
2. 40 minutes to write the story.
3. 60 minutes for construction.
4. 60 minutes for sharing stories and puppets.

Energy (such as batteries or human)

Human

People (how many in each group)

Individually

Knowledge (where can it be found)

Teacher discussions, reading story in text, KID DYNO BITE, prior knowledge of students about other super heroes seen on TV or read about in books.

Material (supplies allowed to be used)

Oaktag, fabric, crayons, markers, glue, brass fasteners, sting.

Capital (how much money will it cost)

Cost of basic materials

Tools and Equipment

Scissors, hole puncher

TEACHER PREPARATION

Background:

This activity is part of language arts and process writing requirements.

Precut large rectangle and square pieces for the puppet body and smaller pieces for other body parts of the puppet that will be hinged to move. Precut pieces will allow you to determine finished size of puppets based on the size pieces you cut, and will alleviate student frustration with manipulating cutting tools. Students can cut circles of the square and rectangle pieces if you choose.

Lesson Introduction:

Lets take some time and talk about super heroes. Who can name a super hero for me. Continue discussion leading to the reading below.

Lesson Plan:

1. Class reads story KID DYNOBITE (Story found in Scott Foresman Reading Series, CRYSTAL KINGDOM.)
2. Teacher and students discuss qualities of a super hero.
3. Brainstorm for problems in the world.
4. Develop the concept for their super hero and write their story (40 minutes)
5. Teacher introduces problem and students plan their puppet.
6. Children construct puppets (60 minutes for construction).
7. Children document the design of their hero.
8. Sharing stories and puppets (60 minutes).

Progress Checkpoints:

1. Teacher will check children's stories prior to beginning construction.
2. Informal checks will be conducted during the construction phase.

LESSON GRADE-LEVEL OBJECTIVES:

1. Use process writing approach to create a story.
2. Develop creative writing skills.
3. Develop sentence structure and paragraph structure.
4. Use proofreading skills.
5. Distinguish between realism and fantasy.
6. Present ideas orally.
7. Develop dramatic skills when sharing story.

INTERDISCIPLINARY POSSIBILITIES:

Writing

Write an original super hero story.

Prepare documentation of the planning and construction of puppets.

OPTION: This same basic procedure could be used to have students develop an original tall tale and tall tale puppet.

Reading

Read KID DYNOBITE from reading textbook

Vocabulary

Terms specific to story

Math

Exposure to proportions of body parts of puppet vs. real life people.

Science

Apply principles of simple machines (levers) when making the moveable parts of the puppet.

Social Studies

Awareness of social problems the super hero might solve.

Career Awareness

Confidence building, self esteem, and problem solving.

Computers

None

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.
- Identify personal interests, abilities, strengths, and weaknesses.

Skills to interact with others (COMPETENCY II)

- Identify how people are unique.
- Demonstrate effective skills for interacting with others.

GRADE 2

TECHNOLOGY-LEARNING-ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
LANGUAGE ARTS	CREATING ORIGINAL MUSICAL INSTRUMENTS	SCIENCE	DEBRA BARTON

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Designing and building a musical instrument using found, rather than purchased, materials.
2. Making an oral presentation explaining their design.
3. Preparing documentation of the problem-solving process.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Design and build a musical instrument using common materials and throwaway items. Demonstrate the completed musical instrument to the class.

RESOURCES:

Time (how much is needed)

Approximately four days, 45-60 minutes daily.

Energy (such as batteries or human)

Human

People (how many in each group)

Individual

Knowledge (where can it be found)

1. Teacher lessons and discussions
2. Basal reading stories, EVERYDAY MUSIC and FIDELIA
3. Prior knowledge of students on sound and musical instruments.

Material (supplies allowed to be used)

Aluminum cans, seeds, rubber bands, string, cardboard rolls, paper plates, jingle bells, cardboard boxes, and other materials as PREAPPROVED by the teacher.

Capital (how much money will it cost)

None

Tools and Equipment

Scissors

TEACHER PREPARATION

Background:

Students read the required stories.

Lesson Introduction:

What different sounds do different materials make? Let's talk about sounds versus noise. What sounds could be thought of as music? We could use rubber bands (demonstrate) or put something inside something else and shake the outer container (demonstrate). What other ideas do you have?

Lesson Plan:

DAY 1: 1. Students read EVERYDAY MUSIC and FIDELIA. (Story found in Scott Foresman Reading Series, RAINBOW SHOWER.)
2. Students brainstorm and list materials for creating musical sounds.

DAY 2: 1. 20 minutes: Students plan and design an apparatus for making music.
2. Teacher must now approve both project and materials to be used.
3. Students gather approved found materials to complete the project.

DAY 3: 45 minutes for construction.

DAY 4: Oral presentations (2-4 minutes per child).

Progress Checkpoints:

1. Teacher will check children's plans and designs and approve materials to be brought in from home.
2. After students gather materials, students check with teacher before beginning construction.
3. Informal checks will be conducted during the construction phase.

LESSON GRADE-LEVEL OBJECTIVES:

1. Present ideas orally
2. Develop writing skills
3. Expand vocabulary
4. Recognize cause-effect relationships

INTERDISCIPLINARY POSSIBILITIES:

Writing

A written description of the final project.
Prepare documentation of construction.

Reading

Reading comprehension skills used to understand the stories and to understand possible research required on generating sound.

Vocabulary
Pitch, vibrating, loudness versus softness of sound.

Math
None

Science
Principles of sound

Social Studies
None

Career Awareness
Confidence building, self esteem, and problem solving.

Computers
None

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify, evaluate, select, and process resources to create and improve technological systems.
- Use an integrated approach to solving problems.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Research and evaluate the past and apply decision-making skills for shaping values.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:
Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.
- Identify personal interests, abilities, strengths, and weaknesses.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:
Awareness of the relationship between work and learning (COMPETENCY V)

- Demonstrate effective study and information-seeking habits.

Awareness of the importance of personal responsibility and good work habits (COMPETENCY VII)

- Demonstrate positive ways to performing working activities.

CAREER PLANNING:
Understanding how to make decisions (COMPETENCY IX)

- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.

GRADE 2

TECHNOLOGY-LEARNING-ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
MATH	CREATURE CLOCKS	SCIENCE (SIMPLE MACHINES)	BERNICE RALLO DEBRA BARTON KATHY PFISTER JANE SCOLES

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Developing a creature which incorporates a clock on its body and which the students can use to help learn time.
2. Preparing documentation.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Learning to tell time is fun, but it can also be challenging. You have been hired as a consultant for the Fun Time Toy Co. Inc. to help create a clock which will make learning to tell time more fun.

Design and build an original "creature clock" which will incorporate either a lever or a wheel and axle into the movement.

RESOURCES:

Time (how much is needed)

Five day, 30 minutes daily:

One 30-minute period for planning, two 30-minute periods to make the basic creature, two 30-minute periods for the assembly of the clock.

Energy (such as batteries or human)

Human

People (how many in each group)

Individual

Knowledge (where can it be found)

1. Teacher lesson and demonstrations.
2. Prior knowledge learned from CLOCKWORKS software.

Material (supplies allowed to be used)

Cereal box (brought in from home), construction paper, glue, straws, brass fasteners, markers, crayons, pom-poms, beads, moveable eyes, and other materials from home as PREAPPROVED by the teacher.

NOTE: Teacher pre-cut and prepunched with holes, wheels (approx. 4" diameter) and various lengths of 1" strips of cardboard to act as levers and wheels/axles.

Capital (how much money will it cost)

None

Tools and Equipment

Scissors, hole puncher

TEACHER PREPARATION

Background:

Teacher pre-cut and prepunched with holes: wheels (approx. 4" diameter) and various lengths of 1" strips of cardboard to act as levers and wheels/axles.

Lesson Introduction:

A gear can be described as a wheel with teeth. Gears are usually attached to a shaft which is similar to an axle. Think about a bicycle. You know where the gears are and what they look like—a wheel with teeth. The axle or shaft is attached to the pedal, and by pushing on that axle or shaft, the gears turn and the bicycle goes.

Think about a swatch watch—does anyone have one. Look at all the gears, and in the middle of the gears is a shaft or axle which makes them turn. The clock on the wall works the same way. Clocks contain many gears which all work together to move the minute and second hand on the face of the clock. Today we are going to concentrate these simple machines, the lever and wheel and axle, to see how we can incorporate them into our projects. (Could continue discussion with other examples of where a lever and wheel and axle might be found in our everyday life.)

Lesson Plan:

1. Teacher lessons on telling time using an analog clock.
2. Use CLOCKWORKS in the computer lab.
3. Students bring in a cereal box from home as the basis for the creature.
4. 30-minutes for planning clock.
5. Two 30-minute periods to make the basic creature from cereal box.
6. Two 30-minute periods for the assembly of the clock.

Progress Checkpoints:

1. Teacher approval after planning and before they begin construction.
2. Informal checks throughout construction.

INTERDISCIPLINARY POSSIBILITIES:

Writing

1. Story problems, eg., It is now 9 o'clock. What time will it be in 2 hours?
2. Have each child create a story explaining their creature and the part the clock plays in the creature.
3. Have children give oral reports on their creature.

Reading

None

Vocabulary

Terms related to time keeping such as minutes, hours, etc.

lever, axle, wheel

Math

See lesson objectives.

Science

A.M. and P.M.

Principles of simple machines.

Social Studies

Time zones and geography.

Career Awareness

Problem-solving skills, the importance of being on time, self esteem, and confidence building.

Computers

CLOCKWORKS (MECC software available in labs).

LESSON GRADE-LEVEL OBJECTIVES:

1. Tells time to the hour with five minute intervals.
2. Reads numbers to 12.
3. Counts by 5.
4. Identifies circles, squares, and other shapes/patterns.

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:

Awareness of the importance of personal responsibility and good work habits (COMPETENCY VII)

- Demonstrate positive ways to performing working activities.

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe what can be learned from making mistakes.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.

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GRADE 2

TECHNOLOGY-LEARNING-ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
MATH	MONEY SKILLS --STARTING A BUSINESS	SOCIAL STUDIES	BERNICE RALLO DEBRA BARTON KATHY PFISTER JANE SCOLES

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Designing and developing a creative and efficient pop corn container which will hold one cup of popped pop corn.
2. Planning a group company name and logo under which to sell their product.
3. Organizing a popcorn sale, including advertising and promotion of product, and learning operations of a small business.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Design the workings of a small business.

Design and develop a creative, efficient package for one cup of popped popcorn to sell.

RESOURCES:

Time (how much is needed)
Four days, 30-45 minutes daily.

Energy (such as batteries or human)
Human

People (how many in each group)
Cooperative learning groups of 4

Knowledge (where can it be found)
1. Teacher lesson and demonstrations.
2. Research on small business operations.

Material (supplies allowed to be used)
Popcorn, bags, construction paper, cardboard, plastic wrap, crayons, markers, and other PREAPPROVED materials from home.

Capital (how much money will it cost)
Cost of popcorn

Tools and Equipment
Popcorn popper, calculators

TEACHER PREPARATION

Background:
Discussion of money and how to make money by selling things.

Discussion of promotional campaigns for products and what makes consumers choose one product over another product. Touch on cents off coupons, enclosing something free inside the package, special introductory offers.

Discuss names for companies and what logos are all about.

Borrow from school's petty cash to purchase whatever each groups needs for their sales campaign. They must repay petty cash from their profits, so discuss profits and expenses.

Get permission to hold the sale. OPTION: Have student consumers vote for the product they like best through survey and have them list the reasons why, eg., free merchandise inside, neat logo, etc.

Lesson Plan:
1. Teacher lessons on counting coins.
2. Money software programs in the computer lab for practice.
3. 30 minutes: Introduction to problem
4. 45 minutes: Students will be organized into groups to determine company name, logo, and advertising/promotional campaign.
5. 45 minutes: Students will design and develop a creative, efficient container to hold one cup of popped popcorn.
6. 45 minutes: Oral presentation of company, logo, and package.

Progress Checkpoints:

(Must have a checkpoint prior to trying a solution, others optional.)
1. Teacher will check planning for jobs each child will do
2. Teacher will check plans prior to constructing their container.
3. Informal checks throughout construction.

INTERDISCIPLINARY POSSIBILITIES:

Writing
Writing advertisements and story problems.

Reading
None

Vocabulary
Related terms such as consumers, capital, supply, demand, market, interest, advertising, promotional campaign, costs, profit.

Math
See lesson objectives.

Science

None

Social Studies

Understanding the workings of a small business.

Career Awareness

Problem-solving skills, an understanding of owning your own business, self esteem, and confidence building.

Computers

Money programs (MECC software available in labs.)

LESSON GRADE-LEVEL OBJECTIVES:

1. Identifying and counting coins up to 99 cents.
2. Recall addition and subtraction facts to 18.
3. Learn terms such as supply, demand, capital, interest, advertising, profit.

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify, apply, and evaluate technological systems to solve problems.
- Identify, evaluate, select, and process resources to create and improve technological systems.
- Use an integrated approach to solving problems.
- Evaluate the impact of technology on the individual, society, and the environment.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Research and evaluate the past and apply decision-making skills for shaping values.
- Identify, explore, and evaluate career opportunities and leisure time interests associated with technology.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.
- Identify personal interests, abilities, strengths, and weaknesses.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.
- Demonstrate group membership skills.
- Demonstrate awareness of different cultures, lifestyles, attitudes, and abilities.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:

Awareness of the benefits of educational achievement (COMPETENCY IV)

- Identify personal strengths and weaknesses in subject areas.
- Describe how the amount of education needed for different occupational levels varies.

Awareness of the relationship between work and learning (COMPETENCY V)

- Describe the importance of preparing for occupations.
- Demonstrate effective study and information-seeking habits.
- Describe how current learning relates to work.
- Describe how one's role as a student is like that of an adult worker.

Awareness of the importance of personal responsibility and good work habits (COMPETENCY VII)

- Describe the importance of personal qualities (e.g., dependability, promptness, getting along with others) to getting and keeping jobs.
- Demonstrate positive ways to performing working activities.
- Describe the importance of cooperation among workers to accomplish a task.
- Demonstrate the ability to work with people who are different from oneself (e.g., race, age, gender).

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.
- Describe how personal beliefs and attitudes effect decision-making.
- Describe how decisions affect self and others.

Awareness of career planning process (COMPETENCY XII)

- Describe the importance of planning.
- Describe skills needed in a variety of occupational groups.

GRADE 2

TECHNOLOGY · LEARNING · ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
MATH	COORDINATE PATTERN PUZZLES --TECHNOLOGY AWARENESS ACTIVITY	TECHNOLOGY EDUCATION	DEBRA BARTON KATHY PFISTER BERNICE RALLO JANE SCOLES

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will accomplish:

1. Designing and drawing a technology-based picture on graph paper, locating coordinates, and creating a coordinate puzzle for someone else to solve.
2. Contributing to a Technology Awareness Coordinate Puzzle Book.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Design and draw an example of technology that can be used for a coordinate puzzle. Make up a coordinate puzzle sheet which lists the coordinates needed to draw the picture, and test the puzzle on someone else in class.

RESOURCES:

Time (how much is needed)
One hour

Energy (such as batteries or human)
Human

People (how many in each group)
Individual

Knowledge (where can it be found)
Teacher led discussion.
Examples of technology items in books in classroom.

Material (supplies allowed to be used)
Paper, pencils, magic markers, and rulers.

Capital (how much money will it cost)
None

Tools and Equipment
None

TEACHER PREPARATION

Background:

Have technology books in the classroom for students to have picture of technological devices on which to base their coordinate puzzle. Be sure their picture is not overly complex which may diminish effectively reproducing the picture on graph paper.

Lesson Introduction:

Today we are going to use our coordinate math to make picture puzzles. Who can give me the name of a devise which is high tech (space shuttle, VCR, others)? Today we want to pick a picture of a device which we can draw on graph paper and locate coordinates. Then we will list the coordinates on a sheet of paper, trade papers with another person, and see if they can figure out the picture by locating the coordinates. Then we'll all have a chance to fix our drawings if they need it and our puzzles will go into a special coordinate puzzle book. You'll be able to try other puzzles on days we have free time.

Lesson Plan

1. Teacher leads a discussion about technology. Teacher and students cite examples of technology which determines what technology is: the application of knowledge to solve needs and wants and extend human capabilities.
2. Students neatly sketch an example of technology on graph paper.
3. Students identify important coordinate points and locate them with dots at the appropriate points, and develop puzzle sheets listing all coordinates.
4. Teacher has students trade puzzle sheets and attempt to complete puzzles.
5. Teacher collects all pictures to make a Technology Awareness Coordinate Puzzle Book.

Progress Checkpoints:

1. Teacher checks designs before students begin locating their coordinates.
2. Teacher checks before students start on the puzzle sheet.
3. Informal checks through process.

INTERDISCIPLINARY/INTEGRATION POSSIBILITIES:

Writing

Students could make a table of contents for the booklet identifying each piece of technology.

Reading

Stories could be read about current technological advances and about the history of various technologies.

Vocabulary

technology

Math

See lesson objectives.

Science

None

Social Studies

None

Career Awareness

Problem solving skills and confidence building.

Computers

None

LESSON GRADE-LEVEL OBJECTIVES

1. Coordinate math skills

TECHNOLOGY EDUCATION PROFICIENCIES

- Work independently and cooperatively in technological activities.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.
- Identify personal interests, abilities, strengths, and weaknesses.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:

Awareness of the relationship between work and learning (COMPETENCY V)

- Demonstrate effective study and information-seeking habits.

Awareness of the importance of personal responsibility and good work habits (COMPETENCY VII)

- Demonstrate positive ways to performing working activities

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.

Section III - 3.5

TELS

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PROCEDURES FOR GRADES 3-6 ACTIVITIES

Developmentally, the children in these grades are able to deal with abstract concepts. The usual procedures of brainstorming ideas and analyzing potential effectiveness of alternative solutions are appropriate at this age, however, you will want to analyze how well your students can abstract before following this procedure. The more concrete thinking typical of students in grades K-2 may be more appropriate for your students, but don't underestimate their abilities in this regard.

It is suggested that you try a TLA and then decide how well your students can handle the abstraction skills required. If your students require the concrete applications, they need to manipulate materials, develop their models, and then document what they have done rather than document ideas prior to building.

Documentation usually consists of both narrative and descriptive drawings. Knowing the ability level of your students can help you determine how much narrative they can handle and how much detail you can expect in their drawings.

Remember as you work these TLAs or develop your own, that the necessary components of technology education include:

1. Developing open-ended activities (TLAs).
2. Following the problem solving process.
3. Documenting the process from beginning to end of each activity.
4. Incorporating technological content.
5. Meeting established grade-level objectives.

Although the TLAs that follow note the grade level at which they were field tested, any TLA can be modified to be appropriate for other grade levels. Feel free to experiment!

NOTE: Copy masters for problem solving models, student documentation sheets, and suggested evaluative criteria for the projects and documentation appear in Appendix A of the PROGRAM DESCRIPTION section of this document.

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TECHNOLOGY LEARNING ACTIVITES

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GRADE 3

TECHNOLOGY - LEARNING - ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
LANGUAGE ARTS	NOVEL - DEAR MR. HENSHAW BEVERLY CLEARY	PROBLEM SOLVING	MARYBETH URBAN CAROLE BAKER PEG BATSON KAREN MEHRING

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Designing and constructing a secure lunch box which would discourage a thief.
2. Documenting the design process.
3. Composing a letter to Leigh empathizing with his problem and summarizing your solution.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Leigh's lunch is being stolen every day, and his gourmet lunch is the only thing that makes him special in school. Design and build a model of a secure lunch box for Leigh which would discourage a thief. It doesn't have to be a working model, but it must depict working parts and you must explain how it would work.

RESOURCES:

Time (how much is needed)
Five days, 30-45 minutes daily.

Energy (such as batteries or human)
Human

People (how many in each group)
Groups of 2 students.

Knowledge (where can it be found)
1. Reading DEAR MR. HENSHAW (Cleary)
2. Teacher-led discussion
3. Research on simple machines

Material (supplies allowed to be used)
Shoe box, construction paper, cardboard, rubber bands, paper clips, tape, glue, string, crayons, and any other materials PREAPPROVED by the teacher.

Capital (how much money will it cost)
None

Tools and Equipment
Scissors, rulers

TEACHER PREPARATION

Background:
After a unit on letter writing, students write a letter to a story character.
This novel is written as a series of letters and reinforces the letter writing unit.
After building the project, students will write another letter reinforcing all skills.

Lesson Introduction:
The technology problem solving model offers four basic steps to solving problems. They are to identify the problem, think of possible solutions, select one, and test it. In the story "Dear Mr. Henshaw" Leigh has a problem. Can you tell me what it is? Think about some ways Leigh could solve his problem. Write your ideas on a piece of paper. Now let's get together in our groups and talk about some of our suggestions.

Lesson Plan:
Day 1: Teacher leads summary/review of the story, introduce the problem and brainstorm ideas. THINK ABOUT THIS PROBLEM TONIGHT AND COME READY TO SHARE IDEAS.
Day 2. Present three ideas to the teacher, decide on one idea, and plan the building.
Day 3-5 Construction

Progress Checkpoints:
1. After three ideas are generated.
2. After final solution is selected prior to construction.
3. Informal checks throughout the construction phase.

LESSON GRADE-LEVEL OBJECTIVES:

1. Comprehension
2. Writing skills
4. Cause and effect relationships
5. Recognizing story problems and solutions
6. Recognizing feelings, actions, traits, motives of characters
7. Presenting ideas orally
8. Letter writing skills
9. Silent and oral reading

INTERDISCIPLINARY POSSIBILITIES:

Writing

1. Documentation
2. Write a letter to Leigh empathizing with his problem and suggesting your solution.

EXTENSION: "Leigh cared about his lunch—write a letter to someone about something you really care about."

Reading

Reading comprehension through the novel, reading their documentation, and reading their stories.

Vocabulary

Vocabulary list to be included in the documentation.

Math

None

Science

Simple machines

Social Studies

None

Career Awareness

Getting along with others, understanding others, teamwork.

Computers

Word processing skills to prepare letters.

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify, apply, and evaluate technological systems to solve problems.
- Identify, evaluate, select, and process resources to create and improve technological systems.
- Use an integrated approach to solving problems.
- Evaluate the impact of technology on the individual, society, and the environment.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Recognize the evolving, dynamic nature of technology and demonstrate its potential for impacting futures.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Describe how behavior influences the feelings and actions of others.
- Demonstrate a positive attitude about self.
- Identify personal interests, abilities, strengths, and weaknesses.

Skills to interact with others (COMPETENCY II)

- Identify how people are unique.
- Demonstrate effective skills for interacting with others.
- Demonstrate skills in resolving conflicts with peers and adults.
- Demonstrate group membership skills.

Awareness of the importance of growth and change (COMPETENCY III)

- Identify personal feelings.
- Identify ways to express feelings.
- Describe causes of stress.
- Identify and select appropriate behaviors to deal with specific emotional situations.
- Demonstrate healthy ways of dealing with conflicts, stress, and emotions in self and others.

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe how choices are made.
- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.

GRADE 3

TECHNOLOGY · LEARNING · ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
LANGUAGE ARTS	SHORT STORIES TWO ON AN ISLAND BIANCA BRADBURY	TRANSPORTATION SCIENCE	KAREN MEHRING

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Designing and building a device to transport two people (marbles) from an island to the mainland.
2. Identifying a problem and applying the problem solving strategies.
3. Documenting the planning and development process throughout activity.
4. Writing two paragraphs describing their device.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

A brother and sister have been stranded on an island and are trying desperately to get back to the mainland.

Design and build some type of device to transport them from the island to the mainland. It can be no larger than 12" x 12" and must be capable of holding the brother and sister who will be represented by two marbles.

RESOURCES:

Time (how much is needed)
Six days—30-45 minutes each day.

Energy (such as batteries or human)
Human

People (how many in each group)
Groups of two

Knowledge (where can it be found)
Reading of the story TWO ON AN ISLAND
Teacher-led discussion on transportation systems (air, land, and water)

Material (supplies allowed to be used)
Cardboard boxes, soda cans, plastic liter bottles, popsicle sticks, balloons, tape, string, yarn, and any other material PREAPPROVED by the teacher. NO PREMANUFACTURED PARTS MAY BE USED.

Capital (how much money will it cost)
Cost of balloons.

Tools and Equipment
Scissors, rulers

TEACHER PREPARATION

Background:
Teacher reads story aloud to children over the course of several weeks. After story is completed, it is discussed with the students.

Lesson Introduction:
Transportation systems fall into three main categories. They are air, land, and water. In each of these categories are many types of vehicles. Can you name a vehicle which would be included in each of these categories? (Teacher lists and discusses each one).
Today we will use this knowledge of transportation systems to solve a problem.

Lesson Plan:

DAY 1:
1. Review story components.
2. Discuss transportation systems of air, land, and water.
3. Divide students into groups.

DAY 2: Introduce the design brief and discuss available materials.

DAY 3:
1. Brainstorm ideas (3 minutes), and generate at least three possible solutions.
2. Select solution, plan in detail, and present to teacher.

DAY 4-5: Construction

DAY 6: Paragraph writing.

Progress Checkpoints:
1. After initial three to five ideas have been developed.
2. After final solution has been planned in detail.
3. Informal checks throughout the construction process

LESSON GRADE-LEVEL OBJECTIVES:

1. Reading comprehension
   a. cause and effect relationships
   b. recognizing story problems
   c. recognizing feelings, actions, traits, motives of characters
2. Writing skills
3. Writing process

INTERDISCIPLINARY POSSIBILITIES:

Writing

Compose a few paragraphs telling how you would get off the island using your device.
Documentation of the design process.

Reading

Reading comprehension through research.

Vocabulary

Teacher introduces new vocabulary from the story as appropriate.

Math

Estimating and measuring

Science

Science principles related to transportation (air, land, and water).

Social Studies

None

Career Awareness

Teamwork, problem solving.
Engineering

Computers

Students could compose their paragraphs on the word processor.

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify, apply, and evaluate technological systems to solve problems.
- Identify, evaluate, select, and process resources to create and improve technological systems.
- Use an integrated approach to solving problems.
- Evaluate the impact of technology on the individual, society, and the environment.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.
- Demonstrate group membership skills.

Awareness of the importance of growth and change (COMPETENCY III)

- Identify personal feelings.
- Identify ways to express feelings.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:

Awareness of the importance of personal responsibility and good work habits (COMPETENCY VII)

- Demonstrate positive ways to performing working activities
- Describe the importance of cooperation among workers to accomplish a task.
- Demonstrate the ability to work with people who are different from oneself (e.g., race, age, gender).

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe how choices are made.
- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- identify strategies used in solving problems.
- Identify alternatives in decision-making situations.
- Describe how personal beliefs and attitudes effect decision-making.
- Describe how decisions affect self and others.

GRADE 3

TECHNOLOGY - LEARNING - ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
LANGUAGE ARTS	RETELLING A STORY	LANGUAGE ARTS	PEG BATSON CAROLE BAKER KAREN MEHRING MARYBETH URBAN

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Designing and drawing a story filmstrip.
2. Designing and building a "projection" device to display a story filmstrip.
3. Using their "filmstrip" and "projector" to retell the story to the class.
4. Document the design process.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

You have been selected to record the details of a story for future generations.

Design and construct a "projection" device to display your story "filmstrip."

CRITERIA: 1. *Filmstrip must have a minimum of 5 frames and a max. of 8 frames.*

2. *Size of opening in projector must accommodate entire frame.*

RESOURCES:

Time (how much is needed)
Six days, 45 min. each day.

Energy (such as batteries or human)
Human

People (how many in each group)
Groups of 2

Knowledge (where can it be found)
Basal reader

Material (supplies allowed to be used)
Boxes of assorted sizes and shapes, paper towel rolls, construction paper, crayons, markers, string, fabric, glue, tape, acetate sheets. Any other materials from home PREAPPROVED by teacher.

Capital (how much money will it cost)
None

Tools and Equipment
Scissors, rulers

TEACHER PREPARATION

Background:
This lesson would be appropriate at the completion of a section of any basal reader. Children choose their favorite story and draw five to eight pictures highlighting important events in the story. Individual pictures are then properly sequenced and attached to form a filmstrip. Students show the filmstrip as they retell the story.

Lesson Introduction:
Throughout history man has searched for ways to communicate with one another and record information for future generations. Cave dwellers made primitive paintings to depict early civilizations. Egyptians used paintings and hieroglyphics to record their history. The cave dwellers and Egyptians were aware of the importance of not only the selection of events but also the placing of events in proper sequence. Today we are going to learn how to select, sequence, and depict the important events from a story.

Lesson Plan:
Day 1: Introduce problem, break into groups, select story and choose 5-8 appropriate scenes.
TONIGHT THINK ABOUT IDEAS FOR SCENES AND COME PREPARED TO WORK WITH YOUR GROUP TOMORROW.
Day 2: Plan device to display filmstrip and present plan to teacher.
Day 3-6: Construct devise and draw filmstrip.

Progress Checkpoints:
1. Check plans for device.
2. Check story scenes for correct sequence.
3. Informal checks throughout the construction process.

LESSON GRADE-LEVEL OBJECTIVES:

1. Identify important events in a story.
2. Arrange events in proper sequence.
3. Retell a story orally to the class.

INTERDISCIPLINARY POSSIBILITIES:

Writing

Documentation

OPTION: Students write a synopsis of the story or captions for each frame.

Reading

Reading comprehension through basal reader and story sequencing.

Vocabulary

None

Math

Measurement in construction of projector.

Science

OPTION: Students could use the principles of simple machines to make moving parts to their projects.

Social Studies

None

Career Awareness

Teamwork, confidence building, self-esteem, problem solving.

Computers

Word processing skills for documentation.

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify, apply, and evaluate technological systems to solve problems.
- Identify, evaluate, select, and process resources to create and improve technological systems.
- Use an integrated approach to solving problems.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Recognize the evolving, dynamic nature of technology and demonstrate its potential for impacting futures.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.
- Identify personal interests, abilities, strengths, and weaknesses.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.
- Demonstrate group membership skills.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:

Awareness of the importance of personal responsibility and good work habits (COMPETENCY VII)

- Demonstrate positive ways to performing working activities.
- Describe the importance of cooperation among workers to accomplish a task.
- Demonstrate the ability to work with people who are different from oneself (e.g., race, age, gender).

GRADE 3

T E C H N O L O G Y - L E A R N I N G - A C T I V I T Y

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
LANGUAGE ARTS	ORIGINAL TALL TALE	SCIENCE (SIMPLE MACHINES)	MARYBETH URBAN

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Creating an original tall tale and an original tall tale character.
2. Constructing their tall tale character with moveable parts using simple machine concepts.
3. Making an oral presentation.
4. Preparing of documentation throughout the process.

DESIGN BRIEF:

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Create an original tall tale.

Using your tall tale, design and construct an original tall tale character with at least one moveable part using simple machine concepts.

RESOURCES:

Time (how much is needed)
Five days, 45-60 minutes daily.

Energy (such as batteries or human)
Human

People (how many in each group)
Individually

Knowledge (where can it be found)
Teacher lessons and discussions on tall tales and simple machines and reference material available in the classroom.

Material (supplies allowed to be used)
Mural paper, construction paper, brass paper fasteners, tape, glue, string, and other materials as PREAPPROVED by the teacher.

Capital (how much money will it cost)
None

Tools and Equipment
Scissors

TEACHER PREPARATION:

Background:
This serves as the culminating activity for the unit on tall tales. Review the components of a tall tale.

Lesson Introduction:
We have read and discussed a number of tall tales, and they are fun. Now we are going to have a chance to create our own special tall tale. Everyone can do this, and the exciting part is the chance to retell the story to your friends. You will have a chance to write your own story, make a puppet-like character to retell the story, and tell the story to the class.

Lesson Plan:

DAY 1:
1. Teacher reads a tall tale to the class.
2. Teacher and students discuss the tall tale.
3. Brainstorm and talk about vocabulary used in tall tales.
4. Teacher introduces the problem.

TEACHER CHARGES STUDENTS WITH THINKING OF A TALL TALE IDEA TO WRITE TOMORROW.

DAY 2: 45-60 minutes to write an original tall tale.

DAY 3:
1. Teacher discusses simple machines and refers to resources students can use for reference
2. 45-60 minutes to construct their tall tale character.

DAY 4: Continue construction

DAY 5: Sharing of product and oral presentation—3-5 minutes per student

Progress Checkpoints:
1. Check tall tale ideas.
2. Check character plans prior to beginning construction.
3. Informal checks during the construction.

LESSON GRADE-LEVEL OBJECTIVES:
1. Develop creative writing skills.
2. Develop sentence structure and paragraph structure.
3. Present ideas orally.
4. Distinguish between realism and fantasy.
5. Learn the term: exaggeration.

INTERDISCIPLINARY POSSIBILITIES:

Writing

Writing skills developed through the writing of an original tall tale and preparation of documentation through the planning and construction phases.

Reading

Reading tall tales and reading their own tall tale.

Vocabulary

The term adjective can be reinforced through the use of the word exaggeration.

Math

None

Science

Simple machines

Social Studies

None

Career Awareness

Confidence building, self esteem, and problem solving.

Computers

Word processing can be used to write tall tales.

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify, evaluate, select, and process resources to create and improve technological systems.
- Use an integrated approach to solving problems.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.
- Identify personal interests, abilities, strengths, and weaknesses.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe how choices are made.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.

GRADE 3

TECHNOLOGY · LEARNING · ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
MATH	MAKING UP WORD PROBLEMS	SOCIAL STUDIES (TALLEST SKY-SCRAPERS IN THE USA)	CAROLE BAKER PEG BATSON KAREN MEHRING MARYBETH URBAN

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Design and build a skyscraper with an observation deck on top.
2. Write a minimum of three word problems pertaining to the skyscrapers discussed in class.
3. Write a minimum of three word problems about their own skyscraper built in class.
4. Create a graph showing the height of all skyscrapers built in class (class project).
5. Document the design process.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

New York City has hired you as a design engineer because they want to have the distinction of having the tallest skyscraper.

Design and build a skyscraper as tall as possible which can support an observation deck (5" x 8" index card).

CRITERIA 1. Skyscraper must be free standing.
2. Maximum of ten 18" straws may be used.
3. Maximum of five 8" pipe cleaners may be used.
4. Maximum of 12" of masking tape may be used.
5. Students may cut materials.

RESOURCES:

Time (how much is needed)
Thirty minutes daily for six days.

Energy (such as batteries or human)
Human

People (how many in each group)
Groups of two

Knowledge (where can it be found)
Math textbook or worksheet, reference materials, teacher lessons and demonstrations.

Material (supplies allowed to be used)
Straws 18", pipe cleaners, masking tape, 5" x 8" index card (observation deck).

Capital (how much money will it cost)
Cost of straws and pipe cleaners.

Tools and Equipment
Scissors and wire cutters for pipe cleaners.

TEACHER PREPARATION:

Background:
After the unit on addition and subtraction, introduce charts and graphs. Continue to support development of strategies to work with word problems. Note similarity between problem-solving model and preparing word problems.

Lesson Introduction:
Our world is full of structures. Some such as animals or rocks are natural structures. Others such as buildings, bridges, and cranes are man-made. Structures are not always large or complicated. Boxes, coffee mugs and bowls are all structures. Materials, shapes, and construction techniques all have an impact on the strength of a structure. Today we are going to make use of these principles while building our structures.

Lesson Plan:
DAY 1: Students complete p.115 in Addison-Wesley Mathematics, Book 3 (1985), or attached work sheet about skyscrapers involving word problems.
DAY 2:
1. Introduce design brief.
2. Introduce towers (structures) showing examples of towers and skyscrapers.
3. Discuss shapes (triangles), and discuss common construction techniques (eg. show students how pipe cleaners can be inserted in ends of straws and tape can reinforce joints).

DAY 3: Draw plan to build skyscraper.
DAY 4: Construction
DAY 5: Complete construction and complete three word problems related to their project.
DAY 6: Prepare graph showing height of all towers built in class. Do this graph as a class activity.

Progress Checkpoints:
1. After ideas have been developed.
2. After final solution has been selected prior to construction.
3. Informal checks throughout the construction phase.

LESSON GRADE-LEVEL OBJECTIVES:

1. Demonstrates the ability to develop and solve word problems
2. Understands charts and graphs
3. Geometry

INTERDISCIPLINARY POSSIBILITIES:

Writing
Write word problems about their own skyscrapers.
Documentation of design process.

Reading

Reading comprehension through research

Vocabulary

New words related to tall structures and skyscrapers.

Math

Graphing (see lesson objectives).

Problem solving—make up story word problems based on their projects.

Measure the height of their skyscraper.

Science

OPTION: Towers could be tested for earthquake and/or tornado resistance by shaking the table and/or using a fan.

Social Studies

Famous architects, famous unique structures, and famous skyscrapers.

Career Awareness

Teamwork, problem solving.

Architect, structural engineer, designer, draftsman, construction workers.

Computers

Word processor could be used for writing word problems.

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify, evaluate, select, and process resources to create and improve technological systems.
- Use an integrated approach to solving problems.
- Evaluate the impact of technology on the individual, society, and the environment.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Research and evaluate the past and apply decision-making skills for shaping values.
- Identify, explore, and evaluate career opportunities and leisure time interests associated with technology.
- Recognize the evolving, dynamic nature of technology and demonstrate its potential for impacting futures.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.
- Identify personal interests, abilities, strengths, and weaknesses.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.
- Demonstrate group membership skills.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:

Awareness of the benefits of educational achievement (COMPETENCY IV)

- Identify personal strengths and weaknesses in subject areas.
- Identify academic skills needed in several occupational groups.
- Describe school tasks that are similar to skills essential for job success.
- Describe how the amount of education needed for different occupational levels varies.

Awareness of the relationship between work and learning (COMPETENCY V)

- Describe the importance of preparing for occupations.
- Demonstrate effective study and information-seeking habits.
- Describe how current learning relates to work.

Awareness of the importance of personal responsibility and good work habits (COMPETENCY VII)

- Demonstrate positive ways to performing working activities.
- Describe the importance of cooperation among workers to accomplish a task.
- Demonstrate the ability to work with people who are different from oneself (e.g., race, age, gender).

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe how choices are made.
- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.

GRADE 3

TECHNOLOGY · LEARNING · ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
MATH	GEOMETRY FOR SPACE TRAVEL	SCIENCE	MARYBETH URBAN CAROLE BAKER PEG BATSON KAREN MEHRING

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Identifying at least three 3-dimensional shapes.
2. Designing and constructing a space ship using those shapes.
3. Solving word problems using a space facts worksheet (attached).
4. Document the design process.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Design and build a three-dimensional space ship incorporating at least three different 3-D geometric shapes.

RESOURCES:

Time (how much is needed)
Five days 30-45 minutes per day.

Energy (such as batteries or human)
Human

People (how many in each group)
Groups of two

Knowledge (where can it be found)
Math textbook, unit on geometry, reference materials, teacher lessons and demonstrations.

Material (supplies allowed to be used)
Boxes (rectangles and round), paper towel rolls, tennis balls, cans, egg cartons, cardboard, string, glue and tape.

Capital (how much money will it cost)
None

Tools and Equipment
Scissors, rulers

TEACHER PREPARATION

Background:
This is a culminating activity for the geometry unit and a reinforcement of word problem skills.

Lesson Introduction:

Space exploration and discovery can be very exciting. Traveling in space poses many problems for astronauts. Because there is no air, astronauts must carry their own oxygen. Once away from the earth's atmosphere the astronauts experience weightlessness. Simple tasks such as drinking a glass of water can be difficult. Can you think of other tasks which might be difficult to do in space?

Space ships have changed dramatically over the years as well. Let's look at some pictures of space ships. What shapes do you see? Today we will have the opportunity to use some 3-D geometric shapes to design our own space ship.

Lesson Plan:

DAY 1: Review three dimensional geometric shapes, introduce problem and separate students into groups of two.

DAY 2: Students meet in groups, brainstorm ideas, decide on one idea, and plan construction.

DAY 3-4: Construction

DAY 5: Students complete space facts worksheet. (Attached)

Progress Checkpoints:

1. After ideas have been developed.
2. After final solution has been selected prior to construction.
3. Informal checks throughout the construction phase.

LESSON GRADE-LEVEL OBJECTIVES:

1. Identify three-dimensional geometric shapes
2. Solving word problems
3. Measuring skills

INTERDISCIPLINARY POSSIBILITIES:

Writing
Write an adventure story to accompany project.

Reading
Students read TIGGER, by A.M. Lightner (found in Scott Foresman Reading Series, SEA TREASURERS).
NOTE: Any story which emphasizes space travel would be acceptable.

Vocabulary
rectangular prism, cylinder, sphere, cube

Math
Identify 3-D geometric shapes and solve word problems.

Science
Space travel concepts and facts

Social Studies
None

Career Awareness
teamwork, problem solving
astronaut, aeronautical engineer

Computers
None

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify, evaluate, select, and process resources to create and improve technological systems.
- Use an integrated approach to solving problems.
- Evaluate the impact of technology on the individual, society, and the environment.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Research and evaluate the past and apply decision-making skills for shaping values.
- Identify, explore, and evaluate career opportunities and leisure time interests associated with technology.
- Recognize the evolving, dynamic nature of technology and demonstrate its potential for impacting futures.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.
- Identify personal interests, abilities, strengths, and weaknesses

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others
- Demonstrate group membership skills.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:

Awareness of the benefits of educational achievement (COMPETENCY IV)

- Identify personal strengths and weaknesses in subject areas.
- Identify academic skills needed in several occupational groups.
- Describe school tasks that are similar to skills essential for job success.
- Describe how the amount of education needed for different occupational levels varies.

Awareness of the relationship between work and learning (COMPETENCY V)

- Describe the importance of preparing for occupations.
- Demonstrate effective study and information-seeking habits.
- Describe how current learning relates to work.

Awareness of the importance of personal responsibility and good work habits (COMPETENCY VII)

- Demonstrate positive ways to performing working activities.
- Describe the importance of cooperation among workers to accomplish a task.
- Demonstrate the ability to work with people who are different from oneself (e.g., race, age, gender).

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe how choices are made.
- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.

Name_____ Date _____

SPACE FACTS WORKSHEET

If you lived on the moon:

* You'd weigh 6 times less than you do on Earth.
* You'd stretch to about 2 inches taller than on Earth.
* You could jump 6 times higher than on Earth.

Use this information to help you answer the following questions.

1. If you weighed 72 pounds on Earth, what would your weight be on the moon?

   _____

2. If Mrs. Spacely can jump 4 feet high on Earth, how high could she jump on the moon?

   _____

3. If your dog, Astro, weighed 9 pounds on a moon scale, how much would he weigh on Earth?

   _____

4. Judy is 54 inches tall on Earth. What would her "moon height" be?

   _____

5. Mr. and Mrs. Jetson got on a moon scale at the same time. They weighed 50 pounds. How much would they weight on Earth?

   _____

6. If Mr. Jetson weighed 180 pounds on Earth, what would Mrs. Jetson weigh?

   _____

7. George won the High Jump Contest on the moon. He jumped 42 feet! How high could he jump on Earth?

   _____

8. Elmo's penny collection is easy to carry on the moon because it weighs only 3 pounds. How much would the pennies weigh on Earth?

   _____

Prepared by: P. Batson

GRADE 3

TECHNOLOGY · LEARNING · ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
MATH	ESTABLISHED CLASSROOM NEED TO INTRODUCE TECHNOLOGY	LANGUAGE ARTS	CAROLE BAKER PEG BATSON KAREN MEHRING MARYBETH URBAN

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Designing and constructing a sound-proof pencil box.
2. Using measurement skills to calculate proportions.
3. Writing an instructional paragraph pertaining to the construction of a sound-proof pencil box with emphasis on descriptive words (adjectives).

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Students are accidently dropping their pencil boxes on the floor and creating a disturbance.

You are to design and build a sound-proof pencil box for your desk that will not make any noise when it drops to the floor.

CRITERIA:

1. *Your pencil box must hold 5 pencils, 2 erasers, 1 pair of scissors, and a small bottle of glue.*
2. *Must not be larger than a standard shoe box.*

RESOURCES:

Time (how much is needed)
Five days, 30-45 minutes daily.

Energy (such as batteries or human)
Human

People (how many in each group)
Students may work individually or in groups to be determined by the teacher (2-4 students).

Knowledge (where can it be found)
Measurement skills and student textbooks.

Material (supplies allowed to be used)
Common materials from home (eg., cotton, foam, shoe box, construction paper, plastic, felt, tape, fabric, glue). All materials must be PREAPPROVED by the teacher.

Capital (how much money will it cost)
None

Tools and Equipment
scissors, rulers

TEACHER PREPARATION

Background:

This lesson has been developed in response to a recurring problem in the classroom. Namely, the disruption caused by pencil boxes which are accidently dropped to the floor. The students suggested this project.

Lesson Introduction:

When manufacturing a product, materials are carefully selected based on their characteristics or properties. Properties of materials include strength, hardness, appearance, ability to conduct electricity, and resistance to corrosion. For example, we make clothing out of nylon because it is lightweight and durable. Styrofoam is used in coffee cups and coolers because it is a good insulator and can keep an item either cold or hot. What are some other materials with which you are familiar? What are some characteristics of each material? Can you give me an example of where each material is used? While designing your project think about the materials you would like to use and the properties or characteristics which make those materials special.

Lesson Plan:

DAY 1: 45 min.
1. Students view "Jiminy Cricket P.S. Problem Solver" video and discuss problem solving strategies.
2. Teacher divides class into cooperative learning groups and discusses the design brief.
3. Teacher asks students to bring in materials from home which they think appropriate to their solutions.

DAY 2: 30 min. Students generate ideas, evaluate materials, and select a solution.

DAY 3: 45-60 min. Students construct a sound-proof pencil box.

DAY 4: 45 min. Students document construction.

DAY 5: 45 min. Students write instructions for building their pencil box.

Progress Checkpoints:

1. Teacher checks on initial ideas and final solution before construction.
2. Teacher monitors construction through informal checks.
3. Teacher monitors student progress on written instructions.

LESSON GRADE-LEVEL OBJECTIVES:

1. Measuring skills
2. Ruler skills and proportions
3. Paragraph writing skills
4. Writing process
5. Descriptive words (adjectives)
6. Problem recognition, forming a solution, executing a solution

INTERDISCIPLINARY POSSIBILITIES:

Writing
Instructional paragraph writing skills about projects.

Reading
Reading comprehension through research.

Vocabulary
OPTION: Students use the thesaurus to find new descriptive adjectives.

Math
Students measure pencils and materials reinforcing reading a ruler and proportion skills.

Science
Examination of materials (sound-absorption properties).

Social Studies
None

Career Awareness
teamwork, problem solving

Computers
Word processing skills to type documentation.

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify, evaluate, select, and process resources to create and improve technological systems.
- Use an integrated approach to solving problems.
- Evaluate the impact of technology on the individual, society, and the environment.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Research and evaluate the past and apply decision-making skills for shaping values.
- Identify, explore, and evaluate career opportunities and leisure time interests associated with technology.
- Recognize the evolving, dynamic nature of technology and demonstrate its potential for impacting futures.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:
Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.
- Identify personal interests, abilities, strengths, and weaknesses.

CAREER PLANNING:
Understanding how to make decisions (COMPETENCY IX)

- Describe how choices are made.
- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.

GRADE 4

TECHNOLOGY · LEARNING · ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
LANGUAGE ARTS	PRONOUNS THROUGH MUSIC TECHNOLOGY	SCIENCE	LEE ANN PELLEGRINI

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Designing and building an original musical instrument.
2. Documenting the process throughout the activity.
3. Identifying all pronouns throughout documentation.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Design and build an original musical instrument(eg., zoomaphone) using ordinary household scrap materials.

CRITERIA 1. Must use a minimum of three different materials.
2. Solution must create a minimum of three sounds (notes or pitches).
3. Solution can be no larger than 12" x 12".

RESOURCES:

Time (how much is needed)

Approximately 4-5 days, 45 minutes each day.

Energy (such as batteries or human)

Human

People (how many in each group)

Groups of 2-3 students.

Knowledge (where can it be found)

Teacher lesson and demonstrations, student research, previous student learning about pronouns, and prior student knowledge of musical instruments.

Material (supplies allowed to be used)

Ordinary household materials (eg. box or cartons, scrap wood, styrofoam, fishing line, foam rubber padding, copper tubing, cardboard tubes, soda cans yarn,etc.) Teacher supplied materials—masking tape, elastic bands, markers. Any other materials as PREAPPROVED by the teacher.

Capital (how much money will it cost)

None

Tools and Equipment

Tubing cutters, scissors

TEACHER PREPARATION

Background:

Lessons on pronouns have been completed and students understand pronouns.

Have pictures of different types of instruments in the families—wind, string, brass, percussion, etc.

Lesson Introduction:

After looking at all these types of instruments, what are your favorites? Why do you like them best? What if you could invent your own musical instrument? What types of sounds would you have your musical instrument make? What types of materials could you use to make the sounds you like? You are going to have a chance to design your own instrument. As you write down the description of your instrument, you will be looking for pronouns.

Lesson Plan:

DAY 1: Separate students into groups and discuss vocabulary list.
- a. Introduce design brief and discuss what is meant by ordinary household scrap materials (cardboard, tubes, cartons, fishing line screws, etc.). Ask students to bring in scraps from home.
- b. Teacher supplies common material (rubber bands, cardboard, markers, etc.).
- c. Begin research musical instruments.

DAY 2: Continue research.
- a. Students evaluate materials, generate ideas(minimum of 3), and document findings.
- b. Create thumbnail sketches and evaluate selections based on design brief criteria.
- c. Justify selection through documentation. Plan a list of materials and steps necessary to build.

DAY 3: Students select one idea and prepare a detailed drawing.

DAY 4: Construction

DAY 5: Construction and testing.

Progress Checkpoints:

1. After day 2: Encourage students to consider many possible solutions. Briefly check research and materials.
2. After day 3: Make sure solution is WELL planned. All solutions must be approved before construction begins.
3. Informal checks throughout the construction phase.

LESSON GRADE-LEVEL OBJECTIVES:

1. Identifying parts of speech—pronouns
2. Expanding vocabulary
3. Developing writing skills and writing process skills
4. Applying study skills—research

INTERDISCIPLINARY POSSIBILITIES:

Writing

Each student in a group must document what EVERY ONE does in the group (daily log). Teacher uses the daily log to help students identify subject and object pronouns.

Reading

Reading comprehension through research activities.

Vocabulary

Resonator, oscillation, amplify, acoustics and acoustical, rhythm, pitch, synthesizer, and octave.

Math

No

Science

Acoustics, oscillation, sound (pitch).

Social Studies

No

Career Awareness

Composer, performer, instrument maker, scientist, inventory/technologist.

Group work (cooperative learning) and problem solving.

Computers

Word processing skills may be incorporated.

TECHNOLOGY EDUCATION PROFICIENCIES

- Use an integrated approach to solving problems.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Research and evaluate the past and apply decision-making skills for shaping values.
- Recognize the evolving, dynamic nature of technology and demonstrate its potential for impacting futures.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.
- Identify personal interests, abilities, strengths, and weaknesses.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.
- Demonstrate group membership skills.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:

Awareness of the relationship between work and learning (COMPETENCY V)

- Demonstrate effective study and information-seeking habits.

Awareness of the importance of personal responsibility and good work habits (COMPETENCY VII)

- Demonstrate positive ways to performing working activities.
- Describe the importance of cooperation among workers to accomplish a task.
- Demonstrate the ability to work with people who are different from oneself (e.g., race, age, gender).

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe how choices are made.
- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.

GRADE 4

TECHNOLOGY · LEARNING · ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
LANGUAGE ARTS	MAKING A MASK	SOCIAL STUDIES SCIENCE (SIMPLE MACHINES)	SANDRA SABLE

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Designing and constructing an original mask.
2. Documenting the process throughout the activity.
3. Writing a story pertaining to their mask.
4. OPTION: Presenting their story to the class.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Design and build an original mask to depict an emotion, trait or special characteristic.

CRITERIA:

1. *Must use a minimum of three different materials.*
2. *Must be able to move to change emotions.*
3. *Must have one unique feature.*

RESOURCES:

Time (how much is needed)
Three days, 45 minutes each day.

Energy (such as batteries or human)
Human

People (how many in each group)
Groups of 2-3 students

Knowledge (where can it be found)
Teacher lesson and discussion. Research books on masks and monster stories.

Material (supplies allowed to be used)
Crayons, cardboard, construction paper, paint, glue, straws, yarn, pipe cleaners, aluminum foil, macaroni, buttons, clay, felt, and any other material PREAPPROVED by the instructor.

Capital (how much money will it cost)
None unless above materials need to be purchased.

Tools and Equipment
Glue guns and scissors.

TEACHER PREPARATION

Background and Lesson Introduction:

Read the story and learn the vocabulary related to masks. Be sure to discuss the Greek masks which depict tragedy and comedy.

We have learned that masks are used to tell a story, and depending on which mask is worn, the emotions of a person will change and set a different mood. We have talked about masks used in different cultures for these reasons and the different types of ceremonies in different cultures which use masks. Now you will have a chance to design your own mask which will help you tell a story about an way you feel or to depict a character you want to talk about.

Lesson Plan:

DAY 1:
1. Read the story MOVIE MONSTERS, ARE THEY REAL? (Story found in Scott Foresman Reading Series, WHEELS AND ROCKETS)
2. Make a list of action and describing words for monsters. Place students in groups of two or three and present the problem. Students begin researching about masks.
3. Students continue researching and planning their own mask.

DAY 2: Construction

DAY 3:
1. Students write stories about their masks.
2. Students present stories to the class.

Progress Checkpoints:

1. Informal checks throughout the construction phase.

LESSON GRADE-LEVEL OBJECTIVES:

1. Study and research skills.
2. Literary understanding and appreciation.
3. Writing skills.
4. Writing process.

INTERDISCIPLINARY POSSIBILITIES:

Writing

Write an original story about masks in general or students own creation

Student documentation of progress throughout activity.

Reading

Reading comprehension through research

Vocabulary

Glare, snarl, roam, retreat, stalk, monster etc

Math

None

Science

Simple machines to make mask components move.

Social Studies

History of masks.

Career Awareness

Actor,actress, writer, producer, researcher, make-up artist, editor. Group work (cooperative learning) and problem solving.

Computers

Word processor may be used for the original stories.

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Research and evaluate the past and apply decision-making skills for shaping values.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.

Skills to interact with others (COMPETENCY II)

- Identify how people are unique.
- Demonstrate effective skills for interacting with others.
- Demonstrate group membership skills.
- Demonstrate awareness of different cultures, lifestyles, attitudes, and abilities.

Awareness of the importance of growth and change (COMPETENCY III)

- Identify personal feelings.
- Identify ways to express feelings.

GRADE 4

TECHNOLOGY · LEARNING · ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
LANGUAGE ARTS	THEN AND NOW TECHNOLOGICAL DEVICES	SOCIAL STUDIES	STEVE CUTLER

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Designing and constructing a prototype for a futuristic invention.
   OPTION: Designing a display panel depicting the past, present, and future of a technological invention.
2. Documenting the process throughout the activity.
3. Writing one page describing key features of their futuristic inventions.
4. Giving a one to two minute oral presentation to the class.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions

PROBLEM/SOLUTION:

Design and build a prototype of what an existing invention might look like in 25 years.

CRITERIA:
1. *Must use a minimum of three different materials.*
2. *Must be an everyday item used in or about your home.*
3. *The prototype must fit into a 12" x 12" area and, therefore, may be scaled down if necessary.*
4. *The prototype should look realistic but does not necessarily have to operate.*

RESOURCES:

Time (how much is needed)
Five days, 45 minutes each day.

Energy (such as batteries or human)
Human

People (how many in each group)
Groups of 2-3 students.

Knowledge (where can it be found)
Teacher lesson and demonstrations.
Student research in history books and library books.
Student interview documents of senior citizens.

Material (supplies allowed to be used)
Cardboard, foamboard, clay, styrofoam blocks, balsa wood scraps, plaster, newspaper, plastic tubing (assorted diameters), construction paper, glue, tape, and other materials as PREAPPROVED by the teacher.

Capital (how much money will it cost)
Approximately $15-$20.

Tools and Equipment
Scissors, files

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TEACHER PREPARATION

Background:
This lesson is designed to include recognition of Grandparents Week, but can be done at any time.

Students will design a survey document that includes 10 questions they would ask their grandparents or senior citizens to gather information about what life was like when they were in fourth grade and the technological devices which were first introduced or popular when they were young. Can include questions related to recreation and entertainment, what school was like, new inventions, etc.

Discussion on the history of inventions and the process for inventing is appropriate. Nonfiction which students can read include POPULAR INVENTING, by Webb Garrison, (found in Scott Foresman Reading Series, GOLDEN SECRETS) and AMERICAN INVENTIVENESS (found in Scott Foresman Reading Series, RUNNING FREE).

Lesson Introduction:

You have had a chance to hear from older people the marvels they have seen over their life and the great inventions that have happened since they were children. The same thing may happen to you, and in the year 2042 you'll be able to look back and see the great inventions that evolved over the years. But right now we are going to look into the future and guess what something we use today would look like 25 years from now. Think about all the things we use today. Pick one that is of interest to you, close your eyes, and dream about what the device would look like in the future.

Lesson Plan:

DAY 1:
1. Using the interview document previously prepared and administered by the students to grandparents or other older citizens, discuss, compare, and contrast how technological inventions have evolved from 50 years ago to the high-tech gadgetry of today.
2. Introduce the problem and have students begin to brainstorm ideas.

DAY 2: Students research and generate alternative solutions.

DAY 3: Students select an invention and begin to plan the construction.

DAY 4: Construction

DAY 5: Writing and presentation to the class.

Progress Checkpoints:

1. After day 2: Encourage students to consider many possible solutions. Briefly check research and materials.
2. After day 3: Make sure solution is WELL planned. All solutions must be approved before construction begins.
3. Informal checks throughout the construction phase.

LESSON GRADE-LEVEL OBJECTIVES:

1. Research skills
2. Writing skills
3. Writing process
4. Study skills
5. Oral communication skills

INTERDISCIPLINARY POSSIBILITIES:

Writing

Writing skills through documentation and paragraph writing.

Reading

Reading comprehension through research activities.

Vocabulary

Technology, invention, innovation, patent, copyright, prototype.

Math - None

Science - None

Social Studies - History of inventing

Career Awareness

Inventor, historian, lawyer, copywriter, mechanical engineer, archeologist, marketing, etc.

Computers

Word processing skills may be incorporated.
THOSE AMAZING READING MACHINES II (MECC software)

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify, apply, and evaluate technological systems to solve problems.
- Identify, evaluate, select, and process resources to create and improve technological systems.
- Use an integrated approach to solving problems.
- Evaluate the impact of technology on the individual, society, and the environment.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Research and evaluate the past and apply decision-making skills for shaping values.
- Identify, explore, and evaluate career opportunities and leisure time interests associated with technology.
- Recognize the evolving, dynamic nature of technology and demonstrate its potential for impacting futures.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.
- Identify personal interests, abilities, strengths, and weaknesses.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.
- Demonstrate group membership skills.
- Demonstrate awareness of different cultures, lifestyles, attitudes, and abilities.

Awareness of the importance of growth and change (COMPETENCY III)

- Identify personal feelings.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:

Awareness of the relationship between work and learning (COMPETENCY V)

- Describe the importance of preparing for occupations.
- Demonstrate effective study and information-seeking habits.

Skills to understand and use career information (COMPETENCY VI)

- Identify work activities of interest to the student.
- Describe how parents, relatives, adult friends, and neighbors can provide career information.

Awareness of the importance of personal responsibility and good work habits (COMPETENCY VII)

- Demonstrate positive ways to performing working activities.
- Describe the importance of cooperation among workers to accomplish a task.
- Demonstrate the ability to work with people who are different from oneself (e.g., race, age, gender).

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.
- Describe how personal beliefs and attitudes effect decision-making.
- Describe how decisions affect self and others.

Awareness of career planning process (COMPETENCY XII)

- Describe the importance of planning.
- Describe skills needed in a variety of occupational groups.

GRADE 4

TECHNOLOGY · LEARNING · ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
MATH	LONG-DISTANCE MEASURING	SCIENCE (UNIT OF MEASURE)	STEVE CUTLER

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Designing and building an original long-distance measuring device.
2. Documenting the design process.
3. Estimating long distances and comparing estimates with reality.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Design and build an original long-distance measuring device using a non-traditional measuring unit capable of measuring and comparing sizes of commercial aircraft.

RESOURCES:

Time (how much is needed)
Three days, 45 minutes each day.

Energy (such as batteries or human)
Human

People (how many in each group)
Groups of 2 or 3.

Knowledge (where can it be found)
Teacher lessons, class reference books, textbook.

Material (supplies allowed to be used)
Cardboard, string, glue, tape, chalk, markers, brads, rubber cement, and any other material PREAPPROVED by the teacher.

Capital (how much money will it cost)
None

Tools and Equipment
Scissors, rulers, compass.

TEACHER PREPARATION

Background:
Introduce lesson on long-distance measuring by comparing the sizes of aircraft in meters. Take students outside, and using a long stretch of school curbing, have them estimate long lengths.

Lesson Introduction:
How many people have seen a jet plane close up. Let's think about just how big it is. Would it fit in the hall outside? Would it fit in the cafeteria? Let's try to see just how big it really is. We'll go outside and measure the curb the size of just one jet so we see how big it really is. What if we did not have rulers to measure lengths? What if inches, feet, or meters were never invented? You are going to have a chance to invent a device to measure long distances in a unit of measure of your choice, but it must be consistent.

Lesson Plan:

DAY 1:
1. Teacher-led discussion to develop the rationale for the need to measure longer distances.
2. Teacher introduces the problem (design brief) with special emphasis on the concept of non-traditional measuring units.
3. Students generate 3-5 ideas (2 ideas from each student).
   THINK ABOUT THIS PROBLEM TONIGHT AND COME READY TO SHARE MORE IDEAS TOMORROW.

DAY 2: Choose one solution, begin planning, and begin construction (after teacher approval).

DAY 3: Construction and testing.

Progress Checkpoints:
1. At the end of each class session, teacher checks student progress.
2. Prior to the construction, all ideas must be approved by the teacher.
3. Informal checks throughout the construction phase.

LESSON GRADE-LEVEL OBJECTIVES:
1. Measurement (measuring lengths)
2. Estimating distances
3. Counting units
4. Computational skills
5. Organizational skills

INTERDISCIPLINARY POSSIBILITIES:

Writing
Student-prepared documentation.

Reading
Reading comprehension through research activities.

Vocabulary
Diameter, circumference, linear, other related terms found in research.

Math
See lesson objectives.
OPTION: Can extend project into measuring to calculate area. Using devices, measure a playing field or other large area.

Science

Various units of measure and the people they are named after.

Social Studies

None

Career Awareness

Engineering and surveying careers, self esteem, team work.

Computers

Word processing skills can be developed through typing documentation.

MEASUREWORKS (MECC software)

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify, apply, and evaluate technological systems to solve problems.
- Identify, evaluate, select, and process resources to create and improve technological systems.
- Use an integrated approach to solving problems.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Identify, explore, and evaluate career opportunities and leisure time interests associated with technology.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.
- Identify personal interests, abilities, strengths, and weaknesses.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.
- Demonstrate group membership skills.
- Demonstrate awareness of different cultures, lifestyles, attitudes, and abilities.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:

Awareness of the benefits of educational achievement (COMPETENCY IV)

- Identify personal strengths and weaknesses in subject areas.
- Identify academic skills needed in several occupational groups.
- Describe how the amount of education needed for different occupational levels varies.

Awareness of the relationship between work and learning (COMPETENCY V)

- Describe the importance of preparing for occupations.
- Demonstrate effective study and information-seeking habits.
- Demonstrate an understanding of the importance of practice, effort, and learning.
- Describe how current learning relates to work.

Awareness of the importance of personal responsibility and good work habits (COMPETENCY VII)

- Demonstrate positive ways to performing working activities.
- Describe the importance of cooperation among workers to accomplish a task.
- Demonstrate the ability to work with people who are different from oneself (e.g., race, age, gender).

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.

Awareness of career planning process (COMPETENCY XII)

- Describe the importance of planning.
- Describe skills needed in a variety of occupational groups.

GRADE 4

TECHNOLOGY-LEARNING-ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
MATH	MEASUREMENT AND GEOMETRY THROUGH STRUCTURES	SCIENCE SOCIAL STUDIES	LEE ANN PELLEGRINI

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Designing and building the tallest spaghetti structure to hold a ping pong ball on the top.
2. Documenting the problem solving process.
3. Calculating the costs of the spaghetti structure.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

As a structural engineer you have been hired to test various construction techniques. To save money and time, you are asked to build prototype structures using spaghetti and marshmallows.

Design and build a spaghetti structure as tall as possible which can hold a ping pong ball.

CRITERIA: 1. Materials are limited to spaghetti and marshmallows

OPTION: 12 inches of masking tape.

2. Structure must be free standing and must remain standing indefinitely.

3. Structure must hold a ping pong ball.

4. Examples of triangulation must be evident in your structure.

RESOURCES:

Time (how much is needed)
Four days, 45 minutes daily.

Energy (such as batteries or human)
Human

People (how many in each group)
Groups of 2

Knowledge (where can it be found)
Teacher lessons and related research books.

Material (supplies allowed to be used)
spaghetti, marshmallows, cardboard base, ping pong ball
OPTION: 12" of masking tape ONLY
IMPORTANT: Let marshmallows get stale so they will be stiffer and work better as "glue."

Capital (how much money will it cost)
Approximately $5

Tools and Equipment
measuring tape
calculators for conversions on worksheet

TEACHER PREPARATION

Background:

Basic math skills are required to complete the worksheet, but this activity should come after a geometry unit covering cones, spheres, and cubes. Have pictures of types of structures and outline the geometric shapes seen on the structure (bridges are the easiest to use). Discuss what makes structures strong (use of triangles in the design).

Lesson Introduction:

Structures play an important role in our society. Bridges, dams, tunnels, buildings, roads, and towers are examples of structures. Even the chair you are sitting on right now is a structure. Each of these structures requires special construction techniques. For example, did you ever wonder how the towers of a bridge are constructed in water? Perhaps you are amazed at the height of a skyscraper or the massiveness of a pyramid. Maybe you are like many people who take things for granted. Well you shouldn't. It usually takes some kind of a tragedy, like a bridge collapse, for most people to become concerned about the structures we often take for granted.

Many of these structures share a common construction technique known as triangulation, which provides the strength of many of the structures we previously discussed. Let's take a look at some common structures with which we are all familiar.

Lesson Plan:

DAY 1: 1. Teacher introduces the problem, discusses examples of structures, and demonstrates the effect force has on various geometric shapes.
2. Students are divided into groups and begin researching possible solutions.

DAY 2: Students continue to research solutions, document findings, and plan their final solution.

DAY 3: Students construct solutions (25-30 minutes) and test solutions (10-15 minutes).

DAY 4: Teacher reviews and reinforces the learning and students complete the worksheet.

Progress Checkpoints:

1. Informal checks throughout the construction phase.

LESSON GRADE-LEVEL OBJECTIVES:

1. Measures lengths
2. Multiplication skills

3. Adds up to four 2, 3, and 4 digit numbers including money
4. Basic number skills
5. Geometry

INTERDISCIPLINARY POSSIBILITIES:

Writing - Writing skills through documentation.

Reading - Reading related research on famous structures.

Vocabulary

Forces, compression, tension, racking, triangulation.

Math - See lesson objectives and attached worksheet.

Science - Forces, compression, tension, etc.

Social Studies

History of famous structures (ex. skyscrapers, bridges, towers).

Career Awareness

Structural engineering, problem solving, cooperative learning.

Computers - None

TECHNOLOGY EDUCATION PROFICIENCIES

- Evaluate the impact of technology on the individual, society, and the environment.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Identify, explore, and evaluate career opportunities and leisure time interests associated with technology.
- Recognize the evolving, dynamic nature of technology and demonstrate its potential for impacting futures.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.
- Identify personal interests, abilities, strengths, and weaknesses.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.
- Demonstrate group membership skills.
- Demonstrate awareness of different cultures, lifestyles, attitudes, and abilities.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:

Awareness of the benefits of educational achievement (COMPETENCY IV)

- Identify personal strengths and weaknesses in subject areas.
- Identify academic skills needed in several occupational groups.
- Describe how the amount of education needed for different occupational levels varies.

Awareness of the relationship between work and learning (COMPETENCY V)

- Describe the importance of preparing for occupations.
- Demonstrate effective study and information-seeking habits.
- Describe how current learning relates to work.
- Describe how one's role as a student is like that of an adult worker.

Skills to understand and use career information (COMPETENCY VI)

- Identify work activities of interest to the student.
- Describe jobs that are present in the local community.
- Identify the working conditions of occupations (e.g., inside/outside, hazardous).

Awareness of the importance of personal responsibility and good work habits (COMPETENCY VII)

- Demonstrate positive ways to performing working activities.
- Describe the importance of cooperation among workers to accomplish a task.
- Demonstrate the ability to work with people who are different from oneself (e.g., race, age, gender).

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.

Awareness of different occupations and changing male/female roles (COMPETENCY XI)

- Describe the changing life roles of men and women in work and family.

Awareness of career planning process (COMPETENCY XII)

- Describe the importance of planning.
- Describe skills needed in a variety of occupational groups.

SPAGHETTI TOWER WORKSHEET

Group Members _____ Date _____

_____

_____

1. How tall is your tower? In inches: _____
   In feet and inches: _____

2. How many pieces of spaghetti did you use to construct your tower? _____

3. How long is one (1) piece of spaghetti? (Estimate to the nearest inch.) _____

4. What is the total number of INCHES of spaghetti used to build your tower? _____
   HINT: Do not measure your tower again. Use numbers you calculated in the questions above.

5. What is the total number of FEET of spaghetti used to build your tower? _____

6. How many marshmallows are used in your tower? _____

CALCULATE:

7. If one (1) piece of spaghetti costs 2 cents, what is the total cost for the spaghetti used to build your tower? _____

8. If one (1) marshmallow costs 4 cents, what is the total cost for the marshmallows used to build your tower? _____

9. What is the total cost for construction of your tower? _____

GRADE 4

T E C H N O L O G Y - L E A R N I N G - A C T I V I T Y

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
MATH	MEASURING TIME	SCIENCE	STEVE CUTLER LEE ANN PELLEGRINI RON POWELL SANDRA SABLE

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Designing and building something to measure time in unique intervals.
2. Documenting the design process.
3. Making an oral presentation on the unique unit of measure and the device developed to measure it.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Design and build something to accurately measure a segment of time.

CRITERIA: 1. The unit of time must be unique, but in real time measure 10 seconds or less.

2. The unit of time must measure accurately for 30 seconds.

RESOURCES:

Time (how much is needed)
Four days, 45 minutes each day.

Energy (such as batteries or human)
Human

People (how many in each group)
Groups of 2 to 3

Knowledge (where can it be found)
Previous knowledge of time keeping devices, research on time, and teacher lesson and discussion.

Material (supplies allowed to be used)
Marbles, cardboard, string, tape, cardboard tubes, cardboard box, beans or peas, soda bottles with caps, brass fasteners, and various recyclable and other materials PREAPPROVED by the instructor.

Capital (how much money will it cost)
None

Tools and Equipment
Stop watch, scissors

TEACHER PREPARATION

Background:
This activity follows lessons on digital and analog clocks, concepts of am and pm, and learning fractional parts of an hour.

Lesson Introduction:
Now that we have talked about and looked at digital and analog clocks, lets think about other ways of measuring time (sundial, wrist watch, etc.). What if you woke up tomorrow and all clocks had disappeared from earth. No way to tell time, no way to have us all be at the same place at the same time. What could we do?

Lesson Plan:

DAY 1:
1. Teacher-led discussion on time and time-keeping devices. Students brainstorm as many time keeping devices as possible.
2. Divide students into groups and present the problem.
3. Students evaluate and classify available materials.
4. Demonstration and discussion of possible solutions.
5. Students begin to generate possible solutions.

DAY 2: Students select and thoroughly plan their solution.
DAY 3: Construction
DAY 4: Construction and testing

PROGRESS CHECKPOINTS:

1. Day 2 all students must present their solution to the teacher by the end of class.
2. Informal checks will be conducted during the construction phase.

LESSON GRADE-LEVEL OBJECTIVES:

1. Tells time by reading a 12-hour clock
2. Study skills

INTERDISCIPLINARY POSSIBILITIES:

Writing
Student-prepared documentation

Reading
Reading comprehension through research activities.

Vocabulary
Acceleration, gravity, interval, consistency, friction, absorbency, investigative research, pendulum.

Math

See lesson objectives.

Science

Gravity, properties of materials, absorbency

Social Studies

History of time keeping devices

Career Awareness

Scientist, inventor, problem solving, cooperative learning.

Computers

Word processing skills could be developed by typing documentation.
PICTURE CHOMPERS, Level 5 and 6 (MECC software)
CLOCKWORKS (MECC software)

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify, evaluate, select, and process resources to create and improve technological systems.
- Use an integrated approach to solving problems.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Research and evaluate the past and apply decision-making skills for shaping values.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.
- Demonstrate group membership skills.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:

Awareness of the relationship between work and learning (COMPETENCY V)

- Demonstrate effective study and information-seeking habits.

Awareness of the importance of personal responsibility and good work habits (COMPETENCY VII)

- Demonstrate positive ways to performing working activities.
- Describe the importance of cooperation among workers to accomplish a task.
- Demonstrate the ability to work with people who are different from oneself (e.g., race, age, gender).

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.

GRADE 5

T E C H N O L O G Y - L E A R N I N G - A C T I V I T Y

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
LANGUAGE ARTS	TELLING STORIES WITH MOVING DIORAMAS (SIMPLE MACHINES)	SELF UNDERSTANDING, SCIENCE	ANN TOBIAS DIANE BUTTON CAROL LESSER DAVE SAMUEL

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Designing and building a diorama with a minimum of one moveable part.
2. Documenting the design process.
3. Making an oral presentation to the class.
4. Participating in a cross grade level presentation.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Design and build a diorama with a minimum of one moving part which depicts the main idea of a chapter, story elements, and/or main characters of the story, SUMMER OF THE SWANS (Betsy Byars).

RESOURCES:

Time (how much is needed)
Six days, 30-45 minutes daily.

Energy (such as batteries or human)
Human

People (how many in each group)
Groups of 2 students

Knowledge (where can it be found)
Information from story, THE SUMMER OF THE SWANS (Betsy Byars), and research simple machines.

Material (supplies allowed to be used)
Shoe box, markers, glue, paper, tape, paper clips, cardboard, string, construction paper, any other material PREAPPROVED by the teacher.

Capital (how much money will it cost)
None

Tools and Equipment
Scissors, rulers, hole punch, paper cutter.

TEACHER PREPARATION:

Background:
Culminating activity after reading novel. An introduction/review and discussion on simple machine principles as it relates to movement within a diorama.

Lesson Introduction:
The purpose of this lesson is to prepare visuals to tell the story, SUMMER OF THE SWANS, to younger children. We want the most important components and characters in the story to be depicted through a sequence of dioramas, which will allow us to retell the story to the third graders.

Lesson Plan:

DAY 1: Review the main ideas from the story according to the students' story logs, and choose scenes to depict with dioramas. The teacher chooses groups, and a lottery is held for each group's diorama scene assignment.

DAY 2: Review simple machines, have students meet in their groups and begin drawing sketches of their dioramas.

DAY 3-5: Construction

DAY 6: Oral presentations to classmates. Cross grade level presentations are arranged outside of this time schedule.

Progress Checkpoints:
1. Teacher approval of final sketch prior to beginning construction.
2. Informal checks throughout construction phase.

INTERDISCIPLINARY POSSIBILITIES:

Writing
1. Documentation
2. Brief description describing diorama (limit on pages)
3. Preparing a story log of main ideas and characters after each chapter is read.

Reading
Reading comprehension through story and research.

Vocabulary
1. Appropriate vocabulary list developed related to the story. This list should be kept in their documentation.
2. Appropriate simple machine vocabulary including crank and slider, pulley, and lever.

Math
None

Science
Simple machines: crank and slider, pulley, lever.

Social Studies
None

Career Awareness
Careers working with handicapped, human growth, personal values and self awareness. Mechanical engineer, draftsman/designer, inventor.

Computers
Word processor for documentation and summary of the diorama.

LESSON GRADE-LEVEL OBJECTIVES:

1. Comprehension: draw conclusions, cause and effect relationships, sequencing
2. Literary understanding and appreciation
3. Recognizing main idea
4. Writing skills

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify, apply, and evaluate technological systems to solve problems.
- Identify, evaluate, select, and process resources to create and improve technological systems.
- Use an integrated approach to solving problems.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Describe how behavior influences the feelings and actions of others.
- Demonstrate a positive attitude about self.
- Identify personal interests, abilities, strengths, and weaknesses.

Skills to interact with others (COMPETENCY II)

- Identify how people are unique.
- Demonstrate effective skills for interacting with others.
- Demonstrate skills in resolving conflicts with peers and adults.
- Demonstrate group membership skills.
- Identify sources and effects of peer pressure.
- Demonstrate awareness of different cultures, lifestyles, attitudes, and abilities.

Awareness of the importance of growth and change (COMPETENCY III)

- Identify personal feelings.
- Identify ways to express feelings.
- Identify and select appropriate behaviors to deal with specific emotional situations.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:

Awareness of the benefits of educational achievement (COMPETENCY IV)

- Identify academic skills needed in several occupational groups.
- Describe relationships among ability, effort, and achievement.
- Describe how the amount of education needed for different occupational levels varies.

Awareness of the relationship between work and learning (COMPETENCY V)

- Describe the importance of preparing for occupations.
- Demonstrate effective study and information-seeking habits.

Skills to understand and use career information (COMPETENCY VI)

- Identify work activities of interest to the student.
- Describe jobs that are present in the local community.
- Identify the working conditions of occupations (e.g., inside/outside, hazardous).

Awareness of the importance of personal responsibility and good work habits (COMPETENCY VII)

- Describe the importance of personal qualities (e.g., dependability, promptness, getting along with others) to getting and keeping jobs.

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe how choices are made.
- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.
- Describe how personal beliefs and attitudes effect decision-making.
- Describe how decisions affect self and others.

Awareness of the interrelationship of life roles (COMPETENCY X)

- Describe how family members depend on one another, work together, and share responsibilities.

Awareness of career planning process (COMPETENCY XII)

- Describe the importance of planning.
- Describe skills needed in a variety of occupational groups.

GRADE 5

TECHNOLOGY · LEARNING · ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
LANGUAGE ARTS	FUTURISTIC VEHICLES -- WRITING SKILLS THROUGH TRANSPORTATION	SCIENCE, SOCIAL STUDIES (CURRENT EVENTS)	DIANE BUTTON

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Designing and building a futuristic vehicle from clay.
2. Preparing documentation on the process.
3. Writing several paragraphs describing their futuristic vehicles.
4. OPTION: Oral presentation to the class.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

A major automobile manufacturer is sponsoring a contest. They are looking for young designers to predict future trends in the automotive industry.

Design and build a prototype for a futuristic vehicle from clay.

CRITERIA:

1. *Vehicle must fit in a 4" High X 4" Wide X 6" Deep garage (cardboard box).*
2. *Enhancements such as fins and spoilers can be added with oaktag.*

RESOURCES:

Time (how much is needed)

DAY 1: 1 hour to read and discuss news article and introduce problem.
DAY 2: 30-40 minutes for construction
DAY 3: 30-40 minutes for paragraph writing
DAY 4: Class presentations, 1-3 minutes per student

Energy (such as batteries or human)

Human

People (how many in each group)

Groups of 2

Knowledge (where can it be found)

Scholastic News, Jan. 10, 1992 and research materials from the library.

Material (supplies allowed to be used)

Clay, oak tag, and cardboard base.

Capital (how much money will it cost)

Cost of clay, if not available.

Tools and Equipment

Popsicle sticks.

TEACHER PREPARATION

Background:

This activity enhances the current events classroom requirements.

Lesson Introduction:

Cities such as Los Angeles, California are facing a serious threat to the quality of life because of air pollution. Experts agree that a large percentage of the problem is caused by cars, buses, and trucks that run on gasoline. Many solutions to this problem are being considered such as vehicles using alternative fuels, solar power, and electric power rather than fossil fuels. Let's take a look at how one community is dealing with this problem.

Lesson Plan:

DAY 1: Read Scholastic News article, Jan. 10, 1992, "Driving Into The 21st Century." Discuss past car models and how existing cars have improved on body types, fuel, comfort, etc. Present problem and discuss limitations (materials).
DAY 2: Construction (30-40 minutes)
DAY 3: Writing paragraphs (30-40 minutes)
DAY 4: Present vehicle to class

Progress Checkpoints:

1. Check final proposal prior to beginning construction.
3. Informal checks throughout construction phase.

INTERDISCIPLINARY POSSIBILITIES:

Writing

1. Documentation
2. Descriptive paragraphs on vehicle

Reading

Reading comprehension through the article and research.

Vocabulary

Auto terminology: alternative fuel, streamlined, aerodynamics, "concept" car, ethanol and methanol.

Math

None

Science

Aerodynamic principles, discussion on electric and solar powered cars, alternative fuels.

Social Studies

History of automobiles.

Career Awareness

Problem solving, teamwork, self-esteem
Auto designer, draftsman, artist, inventor, mechanic, scientist, chemist, assembly line worker

Computers

Word processor for documentation and descriptive paragraph writing.
OPTION: CAR BUILDER simulation software program.

LESSON GRADE-LEVEL OBJECTIVES:

1. Descriptive writing
2. Research skills
3. Expanding vocabulary
4. Writing process

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify, apply, and evaluate technological systems to solve problems.
- Identify, evaluate, select, and process resources to create and improve technological systems.
- Use an integrated approach to solving problems.
- Evaluate the impact of technology on the individual, society, and the environment.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Research and evaluate the past and apply decision-making skills for shaping values.
- Identify, explore, and evaluate career opportunities and leisure time interests associated with technology.
- Recognize the evolving, dynamic nature of technology and demonstrate its potential for impacting futures.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.
- Identify personal interests, abilities, strengths, and weaknesses.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.
- Demonstrate group membership skills.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:

Awareness of the benefits of educational achievement (COMPETENCY IV)

- Identify personal strengths and weaknesses in subject areas.
- Identify academic skills needed in several occupational groups.
- Describe how the amount of education needed for different occupational levels varies.

Awareness of the relationship between work and learning (COMPETENCY V)

- Demonstrate effective study and information-seeking habits.

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe how choices are made.
- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.
- Describe how personal beliefs and attitudes effect decision-making.
- Describe how decisions affect self and others.

GRADE 5

TECHNOLOGY · LEARNING · ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
LANGUAGE ARTS	FLYING THE CHANNEL	SCIENCE	CAROL LESSER

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Designing and building a wing that can fly.
2. Documenting the design process.
3. Writing a one-page biographical sketch on a famous navigator with at least two references in a bibliography.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Design and build a wing that can fly the "English Channel." For the purposes of testing, the English Channel will be an area 15 feet across.

CRITERIA: 1. *Wing span not to exceed 10".*
2. *Wing chord not to exceed 3".*

RESOURCES:

Time (how much is needed)
Six 45 minute periods

Energy (such as batteries or human)
Human

People (how many in each group)
Individual

Knowledge (where can it be found)
Library research and resource books on flight.
Biographies on famous navigators (library research).

Material (supplies allowed to be used)
Styrofoam plates or trays, sandpaper, glue, clay, and paper clips.

Capital (how much money will it cost)
Cost of clay and sandpaper.

Tools and Equipment
Scissors, rulers

TEACHER PREPARATION:

Background:
This story is a required non-fiction reading which allows discussion of a number of interdisciplinary topics. In the reading itself, there are charts to be read, and a skill lesson is taught on reading from a chart or table using this information. A discussion on womens' history is also appropriate.
The principles of flight need to be addressed and should include defining and discussing wing span, wing chord, airfoil, turbulence, streamlined, lift, thrust, and drag.

Lesson Plan:
DAY 1: Read the story HARRIET QUIMBY FLIES THE CHANNEL (Sherwood Harris). (Story found in Scott Foresman Reading Series, SKYCLIMBERS.) Discuss Harriet's flight and the logistics and timetable of that flight. Interpret accompanying charts, and locate places on map.
DAY 2: Discuss the principles of flight. Present problem and discuss the criteria.
DAY 3: Students generate ideas and sketch final plan on graph paper.
DAY 4-5: Construction and testing.
DAY 6: Students prepare biographical sketch using library research. At least two sources must be used and documented in a bibliography.

Progress Checkpoints:
1. At the end of exploring ideas and deciding on one idea
2. Informal checks throughout construction phase.

INTERDISCIPLINARY POSSIBILITIES:

Writing
Creative writing—write about real or imagined flight. Biographical sketch of Harriet Quimby or other famous navigator.

Reading
Reading comprehension through research.

Vocabulary
Terms related to flight: wing span, wing chord, airfoil, turbulence, streamlined, lift, thrust, and drag. Others may be identified through biographical research done by the students.

Math
Students measure wing to meet criteria and measure wing flight for accuracy, distance, and time aloft.

Science
Aerodynamic principles.

Social Studies

Map studies—locating English Channel
History of flight

Career Awareness

Careers related to flight: pilot, navigators, air traffic controllers, weather person.
Problem solving and self esteem.

Computers

Documentation could be prepared using word processing skills.
TIMELINER software (Tom Snyder Productions)

LESSON GRADE-LEVEL OBJECTIVES:

1. Literary understanding and appreciation
2. Reading comprehension
3. Interpretation of a table
4. Recognize place relationships
5. Distinguish between fiction and non-fiction
6. Research skills
7. Writing skills

TECHNOLOGY EDUCATION PROFICIENCIES

- Evaluate the impact of technology on the individual, society, and the environment.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Research and evaluate the past and apply decision-making skills for shaping values.
- Identify, explore, and evaluate career opportunities and leisure time interests associated with technology.
- Recognize the evolving, dynamic nature of technology and demonstrate its potential for impacting futures.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.
- Identify personal interests, abilities, strengths, and weaknesses.

Skills to interact with others (COMPETENCY II)

- Identify how people are unique.
- Demonstrate awareness of different cultures, lifestyles, attitudes, and abilities.

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe how choices are made.
- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.

Awareness of career planning process (COMPETENCY XII)

- Describe the importance of planning.
- Describe skills needed in a variety of occupational groups.

GRADE 5

TECHNOLOGY · LEARNING · ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
LANGUAGE ARTS	ORIGINAL INVENTIONS	PROBLEM SOLVING	DIANE BUTTON CAROL LESSER DAVE SAMUEL ANN TOBIAS

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Preparing a list of nouns.
2. Recognizing action verbs.
3. Designing and building a creative invention.
4. Preparing documentation of the problem-solving process.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Design and build an original invention, based on invention ideas created through the noun/verb worksheet completed in class.

RESOURCES:

Time (how much is needed)
Three days, 1-hour daily.

Energy (such as batteries or human)
Human

People (how many in each group)
Individual

Knowledge (where can it be found)
Teacher lesson, discussion on inventing, and student research.

Material (supplies allowed to be used)
Oaktag or thick cardboard, markers, glue, tape, paper clips, brass fasteners, string or yarn, popsicle sticks pipe cleaners, egg cartons, styrofoam trays or cups, cardboard rolls, rubber bands, other material as PREAPPROVED by the teacher.

Capital (how much money will it cost)
None

Tools and Equipment
Scissors, rulers

TEACHER PREPARATION

Background :
Culminating activity for nouns and verbs.
Procedure:

1. Fold a sheet of paper in thirds, first third ends by being folded inside the other two. First side to be used should have opening on left so other thirds unfold to the right.
2. Students write a listing of 10 nouns that are not people or places on the first side of the paper.
3. Teacher supplies ten action verbs ending in "ing" which student write on the second side. These action verbs could include: crunching, stretching, squashing, mixing, catching, spreading, polishing, washing.
4. When the paper is opened, the nouns followed by the verbs will give ideas for an original invention, such as tree polisher or dog washer. Students pick one of the 10 which the teacher approves. Some of the word matches won't make sense, but there should be a few choices of the 10 that could be novel ideas which generate original, creative, inventions.

** For other good ideas on working with inventions, how to get your students started with inventing, and lesson introductions, see:

1. THE UNCONVENTIONAL INVENTION BOOK—CLASS ROOM ACTIVITIES FOR ACTIVATING STUDENT INVENTIVENESS by Bob Stanish (A Good Apple Activity Book for Grades 3-12).
2. INVENTIONEERING—NURTURING INTELLECTUAL TALENT IN THE CLASSROOM by Bob Stanish and Carol Singletary (A Good Apple Creative Thinking Book for Grades 3-9).
3. INVENTIONS, ROBOTS, FUTURE (The Learning Works Enrichment Series).
4. INVENTION BOOK by Steven Caney (Workman Publishing).

Lesson Plan:
DAY 1: Complete the noun/verb worksheet, decide on one idea, begin rough drawings.
DAY 2: Final plan approved, construction begins.
DAY 3: Construction

Progress Checkpoints:

1. At the end of exploring ideas and deciding on one idea.
2. Check final proposal.
3. Informal checks throughout construction.

LESSON GRADE-LEVEL OBJECTIVES:

1. Cause and effect relationships
2. Extend paragraph writing skills
3. Use organizational skills

INTERDISCIPLINARY POSSIBILITIES:

Writing

Documentation, creative writing about original invention.

Reading

Reading comprehension through research.

Vocabulary

noun, verb, invention

Math

None

Science

None

Social Studies

None

Career Awareness

self esteem (pride in one's own work)
inventor, designer

Computers

Word processor for documentation.

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify, apply, and evaluate technological systems to solve problems.
- Identify, evaluate, select, and process resources to create and improve technological systems.
- Evaluate the impact of technology on the individual, society, and the environment.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Identify, explore, and evaluate career opportunities and leisure time interests associated with technology.
- Recognize the evolving, dynamic nature of technology and demonstrate its potential for impacting futures.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.
- Identify personal interests, abilities, strengths, and weaknesses.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:

Awareness of the benefits of educational achievement (COMPETENCY IV)

- Identify personal strengths and weaknesses in subject areas.
- Identify academic skills needed in several occupational groups.

Awareness of the importance of personal responsibility and good work habits (COMPETENCY VII)

- Demonstrate positive ways to performing working activities.

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe how choices are made.
- Describe what can be learned from making mistakes.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.
- Describe how personal beliefs and attitudes effect decision-making.

GRADE 5

TECHNOLOGY · LEARNING · ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
MATH	GEOMETRY	SCIENCE (STRUCTURES)	DIANE BUTTON CAROL LESSER DAVE SAMUEL ANN TOBIAS

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Identifying and utilizing three to four geometric shapes.
2. Designing and building an original piece of playground equipment.
3. Drawing their design to scale using metric measurement.
4. Calculating the area of the base of their model in metric measurement.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Design and build an original piece of equipment for a playground using at least three (3) but not more than four (4) recognizable geometric shapes.

CRITERIA: 1. Each shape can be used more than once.
2. Finished model must fit in a 20cm cube

RESOURCES:

Time (how much is needed)
Four days, 30-45 minutes daily.

Energy (such as batteries or human)
Human

People (how many in each group)
Groups of 2

Knowledge (where can it be found)
Previous learning of geometry and metric measurement

Material (supplies allowed to be used)
Straws, pipe cleaners, masking tape, oaktag.

Capital (how much money will it cost)
Cost of above materials, if not available.

Tools and Equipment
scissors, compasses, protractors

TEACHER PREPARATION

Background:
This is a culminating geometry activity and a metric review. The teacher should construct a 20cm cube which each student's model must fit in to meet size specification.

Lesson Introduction:
We have had a chance to work with geometry, but let's now look at how we can use the shapes we have learned about. We are going to think about playgrounds for a minute. Think about the pieces of equipment at playgrounds. What kinds of shapes can you identify on playground equipment? What you are going to do is apply your knowledge of geometric shapes and your knowledge of playgrounds to build a model of an original piece of playground equipment.

Lesson Plan:
DAY 1: Identify geometric shapes, review metric measure, present problem, and brainstorming ideas, select one idea.
DAY 2: Finalize plan, draw plan to scale.
Day 3-4: Construction, final calculation of model's base area in metric.

Progress Checkpoints:
1. At the end of brainstorming ideas and deciding on one idea
2. Informal checks throughout construction phase.

LESSON GRADE-LEVEL OBJECTIVES:

1. Identify geometric shapes
2. Measurements in metric
3. Drawing to scale in metric

INTERDISCIPLINARY POSSIBILITIES:

Writing
Documentation and log of daily accomplishments.

Reading
None

Vocabulary
Review of geometry and metric terminology

Math
See lesson plan.
OPTION: Convert area of base to inches

Science
None

Social Studies

None

Career Awareness

Problem solving, cooperating with others (teamwork), self-esteem

Computers

Word processing for documentation

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify, apply, and evaluate technological systems to solve problems.
- Identify, evaluate, select, and process resources to create and improve technological systems.
- Use an integrated approach to solving problems.
- Evaluate the impact of technology on the individual, society, and the environment.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Research and evaluate the past and apply decision-making skills for shaping values.
- Identify, explore, and evaluate career opportunities and leisure time interests associated with technology.
- Recognize the evolving, dynamic nature of technology and demonstrate its potential for impacting futures.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.
- Demonstrate group membership skills.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:

Awareness of the importance of personal responsibility and good work habits (COMPETENCY VII)

- Demonstrate positive ways to performing working activities.
- Describe the importance of cooperation among workers to accomplish a task.
- Demonstrate the ability to work with people who are different from oneself (e.g., race, age, gender).

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe how choices are made.
- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.

GRADE 5

TECHNOLOGY-LEARNING-ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
MATH	BRIDGING GAPS -- STRUCTURES	SOCIAL STUDIES, SCIENCE	DAVE SAMUEL

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Designing and building the most efficient structure from ten sheets of newspaper.
2. Documenting the problem solving process.
3. Discussing bridging gaps in relationships (cooperating with others).

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Design and build the most efficient structure with no more than 10 sheets of newspaper which can hold an object (whiffle ball or ping pong ball) as high as possible.

CRITERIA:
1. *Structure must be free-standing.*
2. *Structure must stay standing indefinitely.*
3. *Efficiency factor must be calculated.*

RESOURCES:

Time (how much is needed)

Three days, 45 minute each day.

OPTION: Seven days, 15 minutes daily. The research will be done at home with each member of the group gathering data. They will report to the teacher on how it is going. One 45 minute session for construction and evaluation.

Energy (such as batteries or human)

Human

People (how many in each group)

Groups of 2-3 students.

Knowledge (where can it be found)

Teacher led discussion and student research and observation.

Material (supplies allowed to be used)

Ten sheets of newspaper for each group, masking tape, whiffle ball.

Capital (how much money will it cost)

Approximately two dollars or cost of whiffle-type ball.

Tools and Equipment

Measuring tape

TEACHER PREPARATION

Background:

The introduction to the lesson is a discussion of the history of bridges which leads into a discussion on bridging all types of gaps, even in personal relationships. An analysis of bridging gaps leads back to analyzing structures.

Lesson Plan:

DAY 1:
1. Teacher led discussion on structures. Show examples of and examine some common structures (bridges, towers, skyscrapers) and uncommon structures (chairs, tables, decks). Discuss bridging personal gaps.
2. Examine these structures for strength. Discuss forces that effect structures (compression, tension,etc.) and demonstrate how these forces can be overcome.
3. Divide students into groups of 2 or 3, introduce the problem and begin brainstorming ideas.

DAY 2: Students research structures and plan their solution.

DAY 3: Construction and testing.

Progress Checkpoints:

1. Informal checks during research. All research must be thorough before construction begins.
2. Informal checks during construction.

LESSON GRADE-LEVEL OBJECTIVES:

1. Basic facts and numeration
2. Addition and subtraction
3. Multiplication
4. Division
5. Measurement-Perimeter, Area
6. Capacity and volume
7. Study skills

INTERDISCIPLINARY POSSIBILITIES:

Writing

Documentation of research, log of what happens in class, and log of what happens outside of class.

a. Each student will maintain an individual log of all procedures.
b. The group will prepare a group document which all group members sign.

Reading

Reading comprehension through research.

Vocabulary

Structure, forces, compression, tension, efficiency, live load, dead load.

Math

Efficiency formula. See lesson objectives for others.

Science

Principles of various forces (compression and tension).

Social Studies

History of bridges—structural technologies

Human relationships

Career Awareness

Problem solving, cooperating with others (teamwork), self-esteem

Construction trades, architect, engineer, scientist.

Computers

OPTION: Word processing skills for documentation.

TECHNOLOGY EDUCATION PROFICIENCIES

- Use an integrated approach to solving problems.
- Evaluate the impact of technology on the individual, society, and the environment.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Research and evaluate the past and apply decision-making skills for shaping values.
- Identify, explore, and evaluate career opportunities and leisure time interests associated with technology.
- Recognize the evolving, dynamic nature of technology and demonstrate its potential for impacting futures.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Describe positive characteristics about self as seen by self and others.
- Describe how behavior influences the feelings and actions of others.
- Demonstrate a positive attitude about self.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.
- Demonstrate skills in resolving conflicts with peers and adults.
- Demonstrate group membership skills.
- Demonstrate awareness of different cultures, lifestyles, attitudes, and abilities.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:

Awareness of the relationship between work and learning (COMPETENCY V)

- Demonstrate effective study and information-seeking habits.

Awareness of the importance of personal responsibility and good work habits (COMPETENCY VII)

- Demonstrate positive ways to performing working activities.
- Describe the importance of cooperation among workers to accomplish a task.
- Demonstrate the ability to work with people who are different from oneself (e.g., race, age, gender).

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe how choices are made.
- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.
- Describe how personal beliefs and attitudes effect decision-making.
- Describe how decisions affect self and others.

GRADE 5

TECHNOLOGY-LEARNING-ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
MATH	ARCHITECTURE	LANGUAGE ARTS	ANN TOBIAS

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Designing and drawing an architectural facade of an entryway to scale which demonstrates knowledge of architectural terminology.
2. Preparing documentation on the process.
3. Reading about types of architecture.
4. Making an oral presentation to their classmates.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Design and draw to scale an architectural facade of an entry way using examples of architectural terms.

CRITERIA: 1. *Scale to be used is 1 inch = 1 foot.*

2. *Examples of at least three architectural terms must be shown.*

OPTION: Students could build a model of the facade.

RESOURCES:

Time (how much is needed)
Five days, 45 minutes daily.

Energy (such as batteries or human)
Human

People (how many in each group)
Groups of 2 students

Knowledge (where can it be found)
Teacher lessons and discussions, encyclopedias, and library research.

Material (supplies allowed to be used)
Graph paper, crayons, markers.

Capital (how much money will it cost)
None

Tools and Equipment
Rulers, compasses, protractors

TEACHER PREPARATION

Background:
This is a culminating activity for geometry (symmetry and graphing). An introduction to basic architecture principles should include roofs, decorative trim, and entryway. Architectural vocabulary should be defined: arcade, arch, buttress, capital, column, shaft, entablature, pediment, post and lintel, dome, vault.

Lesson Plan:
DAY 1: Review math concepts which will be applied. Introduce architecture and define and learn new terms.
DAY 2: Present the problem and let students begin brain storming ideas.
DAY 3-4: Drawing to scale approved idea.
DAY 5: Oral presentations.

Progress Checkpoints:
1. At the end of exploring ideas and deciding on one idea.
2. Informal checks throughout drawing phase.

LESSON GRADE-LEVEL OBJECTIVES:

1. Identifies and graphs congruent, similar, and symmetric figures
2. Estimates and measures
3. Uses organizational skills
4. Uses research skills

INTERDISCIPLINARY POSSIBILITIES:

Writing

Documentation and log of daily accomplishments.

Reading

Reading comprehension skill development through research.

Vocabulary

Vocabulary list of architectural terms.

Math

Geometry and graphing skill development.

Science

None

Social Studies

Architectural history

Career Awareness

The role of an architect and careers in architecture.

Problem solving, cooperating with others, teamwork, self-esteem

Computers

None

TECHNOLOGY EDUCATION PROFICIENCIES

- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Research and evaluate the past and apply decision-making skills for shaping values.
- Identify, explore, and evaluate career opportunities and leisure time interests associated with technology.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.
- Identify personal interests, abilities, strengths, and weaknesses.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.
- Demonstrate group membership skills.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:

Awareness of the benefits of educational achievement (COMPETENCY IV)

- Identify personal strengths and weaknesses in subject areas.
- Identify academic skills needed in several occupational groups.

Awareness of the relationship between work and learning (COMPETENCY V)

- Describe the importance of preparing for occupations.
- Demonstrate effective study and information-seeking habits.
- Describe how current learning relates to work.

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Identify alternatives in decision-making situations.

Awareness of career planning process (COMPETENCY XII)

- Describe the importance of planning.
- Describe skills needed in a variety of occupational groups.

GRADE 6

TECHNOLOGY-LEARNING-ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
LANGUAGE ARTS	FLOATING WAGON ON THE TRAIL. TO OREGON	SCIENCE, SOCIAL STUDIES	GLEN RUBIN GINNY CAAMANO LEE LISSAK JANET RECKENBEIL

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Designing and building a wagon that floats.
2. Documenting the design process.
3. Writing a one-page description of the features of their floating wagon.
4. OPTION: Making an oral presentation to the class.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

You have been hired as a trail master charged with safely delivering a family from Missouri to Oregon. Part of your responsibility is to ensure safe crossing of the bodies of water they encounter along the trail.

Design and build a floating wagon that can safely cross a river with a heavy load/weight.

CRITERIA:
1. *Must be able to carry as many pioneers (marbles) as possible.*
2. *Wagon must fit on a 4" x 6" index card.*

RESOURCES:

Time (how much is needed)
Four days, 30-45 minutes daily.

Energy (such as batteries or human)
Human

People (how many in each group)
Groups of 2

Knowledge (where can it be found)
Resource materials and previous learning.

Material (supplies allowed to be used)
Clay, marbles, straws, popsicle sticks, tongue depressors, string, paper clips, brass fasteners, styrofoam egg cartons.

Capital (how much money will it cost)
Cost of clay

Tools and Equipment
Small aquarium or other water-holding device.

TEACHER PREPARATION

Lesson Introduction:

While reading the TRAIL TO OREGON we discovered that early pioneers experienced many hardships crossing unexplored land. One of these hardships was trying to cross a body of water such as a river. The designers of covered wagons always assumed a trail would be available for the pioneers traveling west. In retrospect, how would you design a wagon so pioneers could float across the water they encountered on the trail?

Lesson Plan:

DAY 1: Review the story TRAIL TO OREGON (Evelyn Sibley Lampman) with students and introduce them to the problem. (Story found in Scott Foresman Reading Series, SKYCLIMBERS)
DAY 2: Students research and plan solutions.
DAY 3: Construction
DAY 4: Testing and presenting solutions

Progress Checkpoints:

1. Teacher checks ideas that are generated.
2. Teacher approves final plan prior to construction.
3. Informal checks throughout the construction phase.

LESSON GRADE-LEVEL OBJECTIVES:

1. Recognize cause and effect relationships
2. Draw conclusions
4. Research skills
5. Process writing skills
6. Literary understanding and appreciation

INTERDISCIPLINARY POSSIBILITIES:

Writing

1. Documenting the problem-solving process.
2. Write a description of their floating wagon.
3. Each group gives an oral presentation and demonstration to the class.

Reading

Reading comprehension will be developed through assigned readings and problem/solution research.

Vocabulary

Buoyancy, displacement, capacity, volume, forge, Conestoga wagon, trail master, other related words found during research.

Math

Concepts of weight, displacement, and dimensions.

Science

buoyancy, displacement

Social Studies

The Oregon Trail and the study of pioneers and the westward movement

Career Awareness

Problem solving, teamwork through cooperative learning.

Computers

OREGON TRAIL (simulation software available in the labs)

Word processing skills could be developed by typing documentation.

TECHNOLOGY EDUCATION PROFICIENCIES:

- Identify, evaluate, select, and process resources to create and improve technological systems.
- Use an integrated approach to solving problems.
- Identify and demonstrate the technological design/problem-solving skills and processes when developing solutions to problems.
- Evaluate the impact of technology on the individual, society and environment.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Research and evaluate the past and apply decision-making skills for shaping values.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Identify personal interests, abilities, strengths, and weaknesses.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.
- Demonstrate group membership skills.
- Demonstrate awareness of different cultures, lifestyles, attitudes, and abilities.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:

Awareness of the benefits of educational achievement (COMPETENCY IV)

- Identify personal strengths and weaknesses in subject areas.

Awareness of the relationship between work and learning (COMPETENCY V)

- Describe how current learning relates to work.

Awareness of the importance of personal responsibility and good work habits (COMPETENCY VII)

- Demonstrate positive ways to performing working activities.
- Describe the importance of cooperation among workers to accomplish a task.
- Demonstrate the ability to work with people who are different from oneself (e.g., race, age, gender)

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.

GRADE 6

TECHNOLOGY · LEARNING · ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
LANGUAGE ARTS	ALTERNATIVE LIVING ENVIRONMENTS	SCIENCE	GINNY CAAMANO LEE LISSAK JANET RECKENBEIL GLEN RUBIN

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Designing and building an underground dwelling to house a family.
2. Documenting the design process.
3. Writing a story about the designed dwelling.
4. Making an oral presentation to the class about their dwelling.

DESIGN BRIEF

Description of the problem and resource the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Your family has decided to be pioneers in the field of alternative living environments, and you have decided upon an underground home.

Design and build an underground dwelling for your family.

RESOURCES:

Time (how much is needed)

30-45 minutes daily for six days.

Energy (such as batteries or human)

Human

People (how many in each group)

Groups of 2 to 4 students. Each student will be responsible for one aspect of the dwelling.

Knowledge (where can it be found)

1. Read and discuss two stories, THE TROUBLE AT TEKTITE 3000 (Maureen Hunter-Bone) and RAKEL'S STAR-HOUSE (Hans-Eric Hellberg).
2. Information from class discussions.
3. Research on underground living.

Material (supplies allowed to be used)

Construction paper, oaktag, tape, straws, cardboard, and other materials from home as PREAPPROVED by the teacher and based on final plans.

Capital (how much money will it cost)

None

Tools and Equipment

Scissors, rulers

TEACHER PREPARATION

Background and Lesson Introduction:

Read two stories THE TROUBLE AT TEKTITE 3000 (Maureen Hunter-Bone) and RAKEL'S STAR-HOUSE (Hans Eric Hellberg).

Lesson Introduction:

We have looked at living underwater and living in space. Let's think about another type of unique living, living underground. If you were going to live underground, you could live in a cave, but that wouldn't offer all the comforts you are used to such as: Regulated temperature, running water, and good lighting, and it certainly wouldn't be that comfortable. So let's think about building a structure underground that would offer the comforts you are used to in your own home.

Lesson Plan:

DAY 1: Read the stories from the textbook and discuss each story. Discussion can include thinking of what you would need to live in a different environment and a discussion of the biosphere.

DAY 2: Present problem to students, cooperative learning groups meet to determine individual responsibilities, groups begin brainstorming ideas, and research on underground living begins.

DAY 3: Research continues and finalize idea documented.

DAY 4-5: Construction

DAY 6: Oral presentations on projects, 3-5 minutes per group.

Progress Checkpoints:

1. After ideas are generated.
2. Teacher approves final plan prior to construction.
3. Informal checks throughout the construction phase.

LESSON GRADE-LEVEL OBJECTIVES:

1. Recognize cause and effect relationships
2. Draw conclusions
4. Research skills
5. Process writing skills
6. Literary understanding and appreciation

INTERDISCIPLINARY POSSIBILITIES:

Writing

1. Prepare the documentation of the problem-solving process.
2. Write a story about their underground dwelling.
3. Each group gives an oral presentation to the class.

Reading

Reading comprehension will be developed through assigned readings and problem/solution research.

Vocabulary

Ventilation, humidity, subterranean, and other words found during research.

Math

Measurement
OPTION: Build solution to scale

Science

Climate control and adaptations.

Social Studies

None

Career Awareness

Engineer, architect, problem solving, teamwork through cooperative learning.

Computers

Word processing skills could be developed by typing documentation.

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify, apply, and evaluate technological systems to solve problems.
- Identify, evaluate, select, and process resources to create and improve technological systems.
- Use an integrated approach to solving problems.
- Evaluate the impact of technology on the individual, society, and the environment.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Research and evaluate the past and apply decision-making skills for shaping values.
- Identify, explore, and evaluate career opportunities and leisure time interests associated with technology.
- Recognize the evolving, dynamic nature of technology and demonstrate its potential for impacting futures.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.
- Identify personal interests, abilities, strengths, and weaknesses.

Skills to interact with others (COMPETENCY II)

- Identify how people are unique.
- Demonstrate effective skills for interacting with others.
- Demonstrate group membership skills.
- Demonstrate awareness of different cultures, lifestyles, attitudes, and abilities.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:

Awareness of the benefits of educational achievement (COMPETENCY IV)

- Identify academic skills needed in several occupational groups.
- Describe relationships among ability, effort, and achievement.
- Describe how the amount of education needed for different occupational levels varies.

Awareness of the relationship between work and learning (COMPETENCY V)

- Demonstrate effective study and information-seeking habits.
- Describe how current learning relates to work.
- Describe how one's role as a student is like that of an adult worker.

Skills to understand and use career information (COMPETENCY VI)

- Identify work activities of interest to the student.
- Describe jobs that are present in the local community.

Awareness of the importance of personal responsibility and good work habits (COMPETENCY VII)

- Demonstrate positive ways to performing working activities.
- Describe the importance of cooperation among workers to accomplish a task.
- Demonstrate the ability to work with people who are different from oneself (e.g., race, age, gender).

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe how choices are made.
- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.
- Describe how personal beliefs and attitudes effect decision-making.

Awareness of career planning process (COMPETENCY XII)

- Describe the importance of planning.
- Describe skills needed in a variety of occupational groups.

GRADE 6

TECHNOLOGY · LEARNING · ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
LANGUAGE ARTS	PROJECT HABITAT	SCIENCE	GLEN RUBIN

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Designing and building a habitat capable of sustaining life for a variety of reptiles.
2. Each student maintaining a log documenting their research.
3. Writing one letter to a resource company or person requesting information pertaining to the project.
4. Learning the responsibility of caring for a living organism.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Design and build a habitat which can sustain life for a variety of reptiles.

CRITERIA:

1. *Must contain three levels of living: water, land, air.*
2. *Provisions must be made to correctly control temperature, humidity, and light as needed for each type of reptile.*
3. *Running water must be provided.*
4. *Habitat must be easily accessible.*
5. *Safety must be a PRIORITY.*

RESOURCES:

Time (how much is needed)

Seven 45 min. periods—Students do independent research.

One 20 min. period each week for maintenance of habitat.

Energy (such as batteries or human)

Human and electrical

People (how many in each group)

One class, regardless of size.

Knowledge (where can it be found)

Pet store, veterinarian, zoo, resource and research materials, prior knowledge, and teacher.

Material (supplies allowed to be used)

Aquarium, heat stones, heat pads, lights, plywood, rocks, branches, plants, reptiles, glass, plastic, screws, braces, wire, electrical tape, outlet boxes silicone sealer, air hose, roller wheels, 2" x 4" boards, nails, exterior paint, clear sealer.

Capital (how much money will it cost)

Varies depending on size and content of project.

Tools and Equipment

Drill, saw, hammer, screw driver, yard stick, measuring tape and wire cutters.

TEACHER PREPARATION

Background:

This unit can be introduced early and developed throughout the year.

Research paper writing should be presented prior to beginning this project.

Students discussed and found lists of endangered animals. Discuss further man's responsibility for the earth and its living organisms.

Lesson Plan:

1. Students research information pertaining to their job assignment related to developing and maintaining the habitat. Students will be required to contact, by letter, at least one person performing a similar job in real life. Each student prepares a report on all information and presents the information to the class.
2. Students analyze all the information and make decisions about the project requirements and set up.
3. Students build the project.
4. Students are responsible for maintaining the habitat over the year.

Progress Checkpoints:

1. After students identify research materials.
2. Check student note cards.
3. Read student outlines to check writing process and progress.
4. Check students short reports.
5. Check student designs before any work is started.
6. Informal checks throughout the construction phase.

LESSON GRADE-LEVEL OBJECTIVES:

1. Study skills
2. Use of reference books
3. Interpret charts, graphs, data
4. Letter writing
5. Following directions
6. Writing process
7. Notetaking
8. Outlining

INTERDISCIPLINARY POSSIBILITIES:

Writing

Writing process will be emphasized through documentation and letter writing assignments.

Each student will write a letter to a resource requesting specific information pertaining to the environment or the reptiles.

Reading

Student uses an index, card catalog, special reference sources, outlining skills, skimming, previewing and reading techniques.

Vocabulary

Vocabulary terms appropriate to research. Students will be required to use new vocabulary in sentences and paragraphs.

Math

Weight measurements, perimeter, volume, ratio, basic number facts, multiplication, division and fractions.

Science

Understanding regions, climates, temperature, weather, heat and animal behavior.

Interprets charts and graphs. Understands basics of electricity.

Social Studies

Information on various regions of the world.

Career Awareness

Zoologist, biologist, climatologist, photobiotic, veterinarian, hydrobiologist, carpenter, electrician, naturalist, geologist, botanist, plumber, wildlife manager.

Computers

Word processor and data base.

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify, apply, and evaluate technological systems to solve problems.
- Identify, evaluate, select, and process resources to create and improve technological systems.
- Use an integrated approach to solving problems.
- Evaluate the impact of technology on the individual, society, and the environment.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Research and evaluate the past and apply decision-making skills for shaping values.
- Identify, explore, and evaluate career opportunities and leisure time interests associated with technology.
- Recognize the evolving, dynamic nature of technology and demonstrate its potential for impacting futures.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.
- Identify personal interests, abilities, strengths, and weaknesses.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.
- Demonstrate skills in resolving conflicts with peers and adults.
- Demonstrate group membership skills.
- Identify sources and effects of peer pressure.

Awareness of the importance of growth and change (COMPETENCY III)

- Demonstrate healthy ways of dealing with conflicts, stress, and emotions in self and others.
- Demonstrate knowledge of good health habits.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:

Awareness of the benefits of educational achievement (COMPETENCY IV)

- Describe how academic skills can be used in the home and community.
- Identify personal strengths and weaknesses in subject areas.
- Identify academic skills needed in several occupational groups.
- Describe relationships among ability, effort, and achievement.
- Describe how the amount of education needed for different occupational levels varies.

Awareness of the relationship between work and learning (COMPETENCY V)

- Describe the importance of preparing for occupations.
- Demonstrate effective study and information-seeking habits.
- Demonstrate an understanding of the importance of practice, effort, and learning.
- Describe how current learning relates to work.
- Describe how one's role as a student is like that of an adult worker.

Skills to understand and use career information (COMPETENCY VI)

- Identify occupations according to data, people, and things.
- Identify work activities of interest to the student.
- Describe jobs that are present in the local community.
- Identify the working conditions of occupations (e.g., inside/outside, hazardous).
- Describe way in which self-employment differs from working for others.
- Describe how parents, relatives, adult friends, and neighbors can provide career information.

Awareness of the importance of personal responsibility and good work habits (COMPETENCY VII)

- Describe the importance of personal qualities (e.g., dependability, promptness, getting along with others) to getting and keeping jobs.
- Demonstrate positive ways to performing working activities.
- Describe the importance of cooperation among workers to accomplish a task.
- Demonstrate the ability to work with people who are different from oneself (e.g., race, age, gender).

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.
- Describe how decisions affect self and others.

Awareness of career planning process (COMPETENCY XII)

- Describe the importance of planning.
- Describe skills needed in a variety of occupational groups.

GRADE 6

TECHNOLOGY-LEARNING-ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
MATH	AREA/PERIMETER	BUILDING TO SCALE	GINNY CAAMANO MARY RILEY JANET RECKENBEIL GLEN RUBIN

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Developing measuring skills by measuring a large area.
2. Converting measurements into square footage, calculating floor and wall covering needs, calculating costs of the coverings, and choosing which coverings they will use with justification. (See worksheets.)
3. Building a model depicting the renovation which they planned.
4. Documenting the design process.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

You have been hired to redecorate the principal's office.

Design and build a scale model depicting the renovation and the decoration of the principal's office.

CRITERIA:
1. *Design must include floor, wall, and window coverings.*
2. *Scale will be 1 inch = 1 foot.*
3. *Total cost not to exceed $1,500.*

RESOURCES:

Time (how much is needed)
30-45 minutes daily for 5 to 7 school days.

Energy (such as batteries or human)
Human

People (how many in each group)
Groups of 4 students (could possibly be 5 students)

Knowledge (where can it be found)
Teacher lessons, research from books, newspapers, magazines.

Material (supplies allowed to be used)
Graph paper, cardboard, construction paper, glue, markers, tape, foamboard, wallpaper and carpet scraps, acetate, and clay.

Capital (how much money will it cost)
Cost of foamboard and clay.

Tools and Equipment
Scissors, rulers, Exacto knives.

TEACHER PREPARATION

Background:
A unit on ratio and proportion will be covered prior to this activity.

Lesson Introduction:
Architects and interior designers must consider many variables when redesigning a space. They must be familiar with lighting requirements, color schemes, and a variety of products and materials. How a client will use the space and traffic patterns must also be considered. Mistakes can be costly, therefore, architects and designers sometimes build scale models to show a client for approval before beginning a renovation.

Lesson Plan:

DAY 1:
1. Teacher will present problem.
2. Teacher (perhaps students) decide on area to be "renovated."

DAY 2:
1. Divide students into teams of four—go to area and measure floors, walls, openings (doors/windows), etc.

DAY 3:
1. Draw existing floor plan on graph paper.
2. Students bring in magazines/newspapers with ads giving prices of various types of coverings.
3. Students calculate square footage (conversion to yardage) needed for each type of material for floor, window, and wall coverings and their costs.

DAY 4-7: Model construction

Progress Checkpoints:
1. At the end of detective work (initial research).
2. After exploring ideas and deciding on one idea prior to construction.
3. Informal checks throughout construction phase.

LESSON GRADE-LEVEL OBJECTIVES:

1. Perimeter/Area
2. Measurement
3. Geometry
4. Basic computation throughout all activities and supporting the above.

INTERDISCIPLINARY POSSIBILITIES:

Writing
Student-prepared documentation of each step of the process.

Reading

Reading comprehension through research activities.

Vocabulary

Scale, floor plan, blueprints, and new vocabulary related to interior design and architecture given by teacher or discovered through research.

Math

See lesson objectives.

Science

None

Social Studies

None

Career Awareness

Architecture and design, self esteem, and teamwork.

Computers

PROBLEM SOLVING STRATEGIES and other possible simulations.

Documentation could be typed to develop word processing skills.

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Identify, explore, and evaluate career opportunities and leisure time interests associated with technology.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.
- Demonstrate group membership skills.

Awareness of the importance of growth and change (COMPETENCY III)

- Identify and select appropriate behaviors to deal with specific emotional situations.
- Demonstrate healthy ways of dealing with conflicts, stress, and emotions in self and others.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:

Awareness of the benefits of educational achievement (COMPETENCY IV)

- Identify personal strengths and weaknesses in subject areas.
- Identify academic skills needed in several occupational groups.
- Describe how the amount of education needed for different occupational levels varies.

Awareness of the relationship between work and learning (COMPETENCY V)

- Demonstrate effective study and information-seeking habits.
- Describe how current learning relates to work.

Skills to understand and use career information (COMPETENCY VI)

- Identify work activities of interest to the student.

Awareness of the importance of personal responsibility and good work habits (COMPETENCY VII)

- Demonstrate positive ways to performing working activities.
- Describe the importance of cooperation among workers to accomplish a task.
- Demonstrate the ability to work with people who are different from oneself (e.g., race, age, gender).

Awareness of how work relates to the needs and functions of society (COMPETENCY VIII)

- Describe the products and services of local employers.

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.

Awareness of career planning process (COMPETENCY XII)

- Describe the importance of planning.
- Describe skills needed in a variety of occupational groups.

NAME: _____

ROOM MEASUREMENTS:

Floor:

L = _____

W = _____

A = _____

Walls:

L = _____ L = _____

W = _____ W = _____

A = _____ A = _____

Windows:

L = _____

W = _____

A = _____

Doors:

L = _____

W = _____

A = _____

Measurements of the furniture:

NAME: _____

WALLPAPERING

1. Calculate the area of the surface to be papered.
2. Allow one roll of wallpaper for each 30 sq. ft. to be papered.
3. Calculate the cost for the number of rolls you need.

Use prices found in current advertisements.
Document your source.

Did you remember windows and doors?

NAME: _____

PAINTING

1. Calculate the area of the surface to be painted.
2. How much paint is needed to cover this area?
   The average can of paint covers 300 sq. ft. per gallon.
3. What is the cost of painting this area?

   Use prices found in current advertisements.
   Document your source.

Did you remember to deduct for windows and doors?

NAME: _____

FLOORING

1. Calculate the area of the surface to be covered.
2. Calculate the cost for the floor covering.
   - A. Floor tiles: unit cost: _____
   - B. Linoleum: unit cost: _____
   - C. Area rug: unit cost: _____
   - D. Wall-to-wall carpeting: unit cost: _____

Use prices found in current advertisements.
Document your source.

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How many SQUARE YARDS will you need to cover your area? _____
Formula for converting to square yards: _____

GRADE 6

TECHNOLOGY-LEARNING-ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
MATH	PLANTS	SCIENCE AND TECHNOLOGY	JANET RECKENBEIL GINNY CAAMANO LEE LISSAK GLEN RUBIN

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Constructing an environment.
2. Documenting and graphing the data gathered throughout the process from beginning to end.
3. Writing a hypothesis on expected outcomes.
4. Writing a summary of outcomes (expected and discrepancies).

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

Design and build an environment to control the growth of plants. This environment must allow for control of temperature, water, light, and time.

CRITERIA:

1. *Maximum size of environment not to exceed 100 square inches.*
2. *The environment must be designed so monitoring plant progress is possible.*

RESOURCES:

Time (how much is needed)

Four class periods of 45-60 min. each, with a 10-15 minute monitoring period every day for an indefinite period of time.

Energy (such as batteries or human)

Human

People (how many in each group)

Groups of 2 students.

Knowledge (where can it be found)

Teacher lessons, student research, computer program LUNAR GREENHOUSE.

Material (supplies allowed to be used)

Seeds, soil, aluminum trays, milk cartons, egg cartons, cardboard, graph paper, pans and foil, plastic wrap, 2-liter soda bottles, coffee stirrers.

Capital (how much money will it cost)

Money for seeds and soil.

Tools and Equipment

Scissors, rulers

TEACHER PREPARATION

Background:

(Science unit on plant adaptation and math unit on graphing will be completed prior to this activity. LUNAR GREENHOUSE software will have been introduced.)

Lesson Introduction:

Scientists study plants to determine the ideal environment to maximize growth potential. Variables which they can control are temperature, light, humidity, soil conditions, and water.

Lesson Plan:

DAY 1	Teacher introduces design brief, and students begin to generate ideas.
DAY 2	Students generate ideas and plan final solution.
DAY 3-4	Construction
DAY 5 AND ON	Students monitor environment

Progress Checkpoints:

1. Teacher checks student ideas.
2. Teacher approves final plan before construction begins.
3. Informal checks throughout construction phase.

LESSON GRADE-LEVEL OBJECTIVES:

Graphing and Probability

1. Reads and interprets graphs
2. Identifies possible outcomes and predicts probability of a given event.

Study Skills

1. Produces quality, accurate, and neat work.
2. Works well independently and uses available time wisely.

Science

1. Can give examples of how plants respond to different stimuli.
2. Can define the terms response and stimulus.
3. Can recognize that a plant's responses to the environment can increase its chances of survival.

INTERDISCIPLINARY POSSIBILITIES:

Writing

Students write a hypothesis.

Students write a final summary/evaluation of results.

Students prepare documentation of their progress success/failures.

Reading

Reading comprehension through research activities.

Vocabulary

New vocabulary appropriate to the activity as found in research.

Examples include: stimulus, response, variable, constant, confounding variable, climate, photosynthesis, tropism, phototropism, germinate.

Math

Students select and develop a chart which graphs the growth of their plants.

Science

Students develop and test a hypothesis, plant adaptation.

Social Studies

None

Career Awareness

Botanist, landscape architect, florist, groundskeeper, gender equity, problem solving, relationship between work and learning (school).

Computers

LUNAR GREENHOUSE software and graphing software, available in labs.

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify, apply, and evaluate technological systems to solve problems.
- Identify, evaluate, select, and process resources to create and improve technological systems.
- Use an integrated approach to solving problems.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Research and evaluate the past and apply decision-making skills for shaping values.
- Identify, explore, and evaluate career opportunities and leisure time interests associated with technology.
- Recognize the evolving, dynamic nature of technology and demonstrate its potential for impacting futures.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.
- Demonstrate skills in resolving conflicts with peers and adults.
- Demonstrate group membership skills.
- Demonstrate awareness of different cultures, lifestyles, attitudes, and abilities.

Awareness of the importance of growth and change (COMPETENCY III)

- Identify and select appropriate behaviors to deal with specific emotional situations.
- Demonstrate healthy ways of dealing with conflicts, stress, and emotions in self and others.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:

Awareness of the benefits of educational achievement (COMPETENCY IV)

- Identify personal strengths and weaknesses in subject areas.
- Identify academic skills needed in several occupational groups.
- Describe school tasks that are similar to skills essential for job success.
- Describe how the amount of education needed for different occupational levels varies.

Awareness of the relationship between work and learning (COMPETENCY V)

- Demonstrate effective study and information-seeking habits.
- Demonstrate an understanding of the importance of practice, effort, and learning.
- Describe how current learning relates to work.
- Describe how one's role as a student is like that of an adult worker.

Skills to understand and use career information (COMPETENCY VI)

- Identify work activities of interest to the student.
- Describe jobs that are present in the local community.
- Identify the working conditions of occupations (e.g., inside/outside, hazardous).

Awareness of the importance of personal responsibility and good work habits (COMPETENCY VII)

- Demonstrate positive ways to performing working activities.
- Describe the importance of cooperation among workers to accomplish a task.
- Demonstrate the ability to work with people who are different from oneself (e.g., race, age, gender).

Awareness of how work relates to the needs and functions of society (COMPETENCY VIII)

- Describe how work can satisfy personal needs.
- Describe the products and services of local employers.

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe how choices are made.
- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.

Awareness of career planning process (COMPETENCY XII)

- Describe skills needed in a variety of occupational groups.

GRADE 6

TECHNOLOGY · LEARNING · ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
MATH	MEASUREMENT AND PATTERN DEVELOPMENT	SCIENCE, TECHNOLOGY	GINNY CAAMANO LEE LISSAK JANET RECKENBEIL GLEN RUBIN

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Designing and constructing an original popcorn container.
2. Documenting the design process.
3. Calculate the volume of their container.
4. OPTION: Students could be required to calculate the volume of all containers developed by the class.

DESIGN BRIEF

Description of the problem and resource the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:

You have been hired as a consultant by the Fluffy Pop Popcorn Company to help market their new product.

Design and construct an original container to hold a minimum of 2 cups of popped popcorn.

CRITERIA:

1. *Container must be a recognizable geometric solid.*
2. *Container must have a top to prevent spillage.*
3. *Container must be free standing (if necessary a separate base can be constructed).*
4. *Pattern development must fit on a 12" x 18" sheet of oaktag.*

RESOURCES:

Time (how much is needed)

Five days, 45-60 minutes daily.

Energy (such as batteries or human)

Human

People (how many in each group)

Groups of 2

Knowledge (where can it be found)

Teacher lessons on volume, capacity, and pattern development.

Student research.

Material (supplies allowed to be used)

Oaktag, masking tape, non-toxic glue sticks, pencils, markers.

Capital (how much money will it cost)

Cost of oaktag and popcorn.

Tools and Equipment

Scissors, rulers, protractor, popcorn popper.

TEACHER PREPARATION

Background:

Lessons on measurement and geometry precede this activity.

Lesson Introduction:

We have learned how to calculate the capacity of various geometric solids. This information is extremely valuable to people in a variety of occupations. For example, an engineer, when designing a heating or cooling system for a place of business, needs to be able to calculate the capacity of both the unit and the duct work that will carry the heated or cooled air. Product designers also need to be able to calculate capacity when designing containers to hold a product. They always strive for efficiency in packaging to minimize shipping and production costs.

Lesson Plan:

DAY 1: 1. Teacher introduces students to pattern development by showing the unfolded patterns of common products (cereal boxes,milk cartons, tea bag box, etc.).
2. Calculate the dry weight capacity of these containers with students.
3. Demonstrate the procedure for making a pattern.

DAY 2: Introduce the problem to students and begin brainstorming ideas.

DAY 3: Students plan and begin drawing pattern developments.

DAY 4: Students complete drawing and construct their patterns.

DAY 5: Final day to construct and decorate solutions.

Progress Checkpoints:

1. After ideas are generated.
2. Teacher approves final plan prior to drawing and constructing.
3. Informal checks throughout the construction phase.

LESSON GRADE-LEVEL OBJECTIVES:

1. Measurement skills
2. Geometry
3. Volume and dry measures

INTERDISCIPLINARY POSSIBILITIES:

Writing

Prepare documentation of the problem-solving process.

OPTION: Each group gives an oral presentation to the class.

Reading

Reading comprehension will be developed through research.

Vocabulary

Volume, capacity, pattern development, ounce, tab, flap.

Math

See lesson objectives.

Science/Health

Volume and capacity

Reading food labels/nutritional values

OPTION: Develop a nutritional label for the package.

Social Studies

OPTION: Students can study advertising, consumer appeal of products and logos, and marketing

Career Awareness

Product designer, sheet metal technologist, draftsman, problem solving, and teamwork.

Computers

Word processing skills could be developed by typing documentation.

OPTION: Students can design logo using drawing/graphics program.

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify, apply, and evaluate technological systems to solve problems.
- Use an integrated approach to solving problems.
- Identify and demonstrate safety procedures and methods established by the teacher to process materials, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover and solve technological problems.
- Research and evaluate the past and apply decision-making skills for shaping values.
- Identify, explore, and evaluate career opportunities and leisure time interests associated with technology.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self-concept (COMPETENCY I)

- Demonstrate a positive attitude about self.
- Identify personal interests, abilities, strengths, and weaknesses.

Skills to interact with others (COMPETENCY II)

- Demonstrate effective skills for interacting with others.
- Demonstrate skills in resolving conflicts with peers and adults.
- Demonstrate group membership skills.

EDUCATIONAL AND OCCUPATIONAL EXPLORATION:

Awareness of the benefits of educational achievement (COMPETENCY IV)

- Identify personal strengths and weaknesses in subject areas.
- Identify academic skills needed in several occupational groups.

Awareness of the relationship between work and learning (COMPETENCY V)

- Describe the importance of preparing for occupations.
- Demonstrate effective study and information-seeking habits.
- Describe how current learning relates to work.

Awareness of the importance of personal responsibility and good work habits (COMPETENCY VII)

- Demonstrate positive ways to performing working activities.
- Describe the importance of cooperation among workers to accomplish a task.
- Demonstrate the ability to work with people who are different from oneself (e.g., race, age, gender).

Awareness of how work relates to the needs and functions of society (COMPETENCY VIII)

- Describe the products and services of local employers.

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe how choices are made.
- Describe what can be learned from making mistakes.
- Identify and assess problems that interfere with attaining goals.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.
- Describe how personal beliefs and attitudes effect decision-making.

Awareness of career planning process (COMPETENCY XII)

- Describe the importance of planning.
- Describe skills needed in a variety of occupational groups

Section IV • GUIDANCE

TELS

TEACHING ESSENTIAL LIFE SKILLS

RANDOLPH TOWNSHIP SCHOOLS
RANDOLPH • NEW JERSEY

INTRODUCTION

The purpose of the guidance component of our TELS grant was to determine the need for career guidance at the elementary level and then develop K-6 career guidance activities based on the need assessment, the NCDG (National Career Development Guidelines), and the TEP (Technology Education Proficiencies).

The problem solving model formed the foundation for both the Career Guidance and Technology Learning Activities. Solving problems is a vital life skill which provides students with a format to guide them through personal, educational, and professional problems. Learning to apply the problem solving model to activities throughout the educational setting forms the underpinnings of a solid approach to all future life problems.

In order to introduce the problem solving model, prior to embarking on career guidance activities, grant personnel utilized the Disney video, Jiminy Cricket, P.S. (Problem Solver). The four step problem solving model which consists of:

1. ***Identify the problem.*** The problem may be generated by the teacher or students.
2. ***Think up ideas to solve it.*** You may rely on yourself, brainstorm ideas with others or use research skills.
3. ***Try one of the ideas.*** Review the choices, select what appears to be the best one, and try that idea.
4. ***Test it.*** Test your choice and evaluate the results.

The PROGRAM DESCRIPTION section offers a detailed explanation of the problem solving model components and application. Copy masters of the model appear in Appendix A.

A needs assessment for guidance services in the elementary schools set the framework for expanding Randolph's guidance options for all elementary students. While children in Randolph have benefitted from a comprehensive guidance program in grades 7-12, guidance counselors are not in place in the elementary schools.

The three categories of activities to be addressed by the TELS grant are:

1. Activities for an at-risk population.
2. Career development activities—gender equity.
3. Individual Career Plans.

NEEDS ASSESSMENT

The National Career Development Guidelines Handbook offers a comprehensive set of competencies and indicators to serve as measurable outcomes of a career guidance and counseling program. The handbook also outlines implementation procedures for initiating or strengthening career guidance and counseling programs at the local level. This nation-wide initiative was designed to be comprehensive yet flexible. Local schools are encouraged to verify the appropriateness of the competencies and indicators for their own audience, modifying them as necessary, and then developing a final list of standards.

"The most effective way to verify the competencies and indicators is to conduct a needs assessment. A needs assessment:

Identifies needs of students being served.

Provides information for program planning.

Provides information to staff and policy-makers to ensure program support.

Provides a basis for selecting and implementing program activities." (NCDG Handbook, p. 20)

The NCDG handbook supplies a needs assessment which includes all the elementary school indicators. It requires respondents to evaluate each item with regard to (1) importance to individuals and (2) current achievement—your perceptions of how many individuals typically have the knowledge, skill or ability. This instrument consists of over 60 indicators and requires more than 120 responses.

Randolph modified this assessment tool by reducing the number of items to 23, retaining what we felt were the most pertinent indicators from each of the twelve competencies.

The assessment was administered to all professional teaching staff at each elementary school by TELS personnel. The results were tallied, and the ten highest guidance priorities were determined to be :

1. Demonstrate appropriate behavior when peer pressure is contrary to ones beliefs.
2. Describe how decisions affect self and others.
3. Demonstrate ways to express feelings.
4. Describe the importance of planning and goal setting.
5. Demonstrate strategies used in solving problems.
6. Identify positive characteristics about self and others.
7. Demonstrate effective skills for interacting with others.
8. Implement a plan for improving academic skills.
9. Describe the importance of cooperation among workers to accomplish a task.
10. Identify personal feelings.

Survey results will serve to assist the district in exploring the role guidance services would take at the elementary level as we embark on developing a K-6 elementary program. Randolph's need assessment instrument, designed for and completed by professional staff, is shown on the following pages.

GUIDANCE DEPARTMENT NEEDS ASSESSMENT FORM

INSTRUCTIONS:

As a staff member it is important that you complete this survey of the career guidance and counseling needs of the students we serve. This survey lists knowledge, skills, and abilities that are related to effective career exploration and planning. When you read each item, you will give it two different ratings: 1) Importance for individuals, and 2) Current achievement - your perceptions of how many individuals typically have the knowledge, skills or ability.

Importance Scale - Circle your choice using the following ratings:

Of Great Importance				Of Little Importance
5	4	3	2	1

Current Achievement Scale - Circle your choice using the following ratings:

None	Few	Some	Most	All
0-10%	11-30%	31-70%	71-90%	91-100%
5	4	3	2	1

TO COMPLETE THIS ASSESSMENT,

ASK YOURSELF IF THE CHILDREN IN YOUR CLASSROOM CAN:

1. Describe positive characteristics about self as seen by self and others.

Importance	Current Achievement	Total
5 4 3 2 1	5 4 3 2 1	___

2. Identify personal interests, abilities, strengths, and weaknesses.

Importance	Current Achievement	Total
5 4 3 2 1	5 4 3 2 1	___

3. Identify how people are unique.

Importance	Current Achievement	Total
5 4 3 2 1	5 4 3 2 1	___

4. Demonstrate effective skills for interacting with others.

Importance	Current Achievement	Total
5 4 3 2 1	5 4 3 2 1	___

5. Demonstrate appropriate behaviors when peer pressures are contrary to one's belief.

Importance	Current Achievement	Total
5 4 3 2 1	5 4 3 2 1	___

6. Identify personal feelings.

Importance	Current Achievement	Total
5 4 3 2 1	5 4 3 2 1	___

7. Identify ways to express feelings.

Importance	Current Achievement	Total
5 4 3 2 1	5 4 3 2 1	___

8. Identify personal strengths and weaknesses in subject areas.

Importance	Current Achievement	Total
5 4 3 2 1	5 4 3 2 1	___

9. Implement a plan of action for improving academic skills.

Importance	Current Achievement	Total
5 4 3 2 1	5 4 3 2 1	___

10. Describe school tasks that are similar to skills essential for job success.

Importance	Current Achievement	Total
5 4 3 2 1	5 4 3 2 1	___

11. Demonstrate effective study and information-seeking habits.

Importance	Current Achievement	Total
5 4 3 2 1	5 4 3 2 1	___

12. Describe how current learning relates to work.

Importance	Current Achievement	Total
5 4 3 2 1	5 4 3 2 1	___

13. Describe work of family members, school personnel, and community workers.

Importance	Current Achievement	Total
5 4 3 2 1	5 4 3 2 1	___

14. Describe the importance of personal qualities (e.g. dependability, getting along with others) in achieving success.

Importance	Current Achievement	Total
5 4 3 2 1	5 4 3 2 1	___

15. Describe the importance of cooperation among workers to accomplish a task.

Importance	Current Achievement	Total
5 4 3 2 1	5 4 3 2 1	___

16. Describe ways in which work can meet the needs of society and overcome social and economic problems.

Importance	Current Achievement	Total
5 4 3 2 1	5 4 3 2 1	___

17. Identify strategies used in solving problems.

Importance	Current Achievement	Total
5 4 3 2 1	5 4 3 2 1	___

18. Describe how decisions affect self and others.

Importance	Current Achievement	Total
5 4 3 2 1	5 4 3 2 1	___

19. Describe the various roles an individual may have (e.g., friend, student, worker, family member).

Importance	Current Achievement	Total
5 4 3 2 1	5 4 3 2 1	___

20. Describe work-related activities in the home, community and school.

Importance	Current Achievement	Total
5 4 3 2 1	5 4 3 2 1	___

21. Describe how family members depend on one another, work together and share responsibilities.

Importance	Current Achievement	Total
5 4 3 2 1	5 4 3 2 1	___

22. Describe the changing life roles of men and women in work and family.

Importance	Current Achievement	Total
5 4 3 2 1	5 4 3 2 1	___

23. Describe the importance of planning and goal setting.

Importance	Current Achievement	Total
5 4 3 2 1	5 4 3 2 1	___

ACTIVITIES FOR AN AT-RISK POPULATION

Identification of an At-Risk Population

Historically, the term "at-risk" has applied to students who do not meet with success in school and/or are potential dropouts. Programs targeting these groups of students typically were not designed to impact children at the elementary school level. It is more common for elementary counselors to spend the majority of their time dealing with children currently experiencing problems rather than with prevention activities. More recently, however, the trend has been toward a preventive and developmental guidance approach for all students.

Among our average students we find children who exhibit behaviors that cause them to become an "invisible" population. These students, who are characterized as passing, struggling quietly, and barely attracting attention, need just that—OUR ATTENTION. "NEA Today" (Sept. 1991) cites a Charlotte, North Carolina, program that has received national recognition by giving attention to this low profile group. The program creates a "school within a school" to give special attention and a sense of belonging to this group of students who can be quietly lost in the system.

Many researchers believe that social success is a necessary foundation for academic success. Barbara Wolf, Professor of Education at Indiana University, notes that children who are isolated and rejected are frequently not ready to learn. She also says " when kids are happy and self-confident, other behaviors will 'kick in,' like risk-taking and motivation." (Teacher Magazine, April 1991) Another educational researcher, Steven Asher from the University of Illinois, states in the same article that " the consequences of low peer acceptance may be more severe than low [academic] achievement." He suggests that for some children making friends may be of greater importance than making the honor roll.

Keeping these concerns in mind, identification of an at-risk population, who might be described as the "invisible child," was undertaken. We endeavored to select children with characteristics such as being a loner, having social and/or economic disadvantages, struggling quietly, and exhibiting low self-esteem. Students were recommended for the groups based on input by teachers, Special Services personnel, and administrators. A letter was sent to parents requesting permission for each identified child to participate in the groups. The resulting inquires from many parents also provided valuable input in forming the groups. The groups at each elementary school were comprised of children from grades 1-6. Each group had three to five children from one or two grade levels. Each group met once a week for six consecutive weeks whenever possible for 30-45 minutes. It was decided that small group counseling would begin at two of the schools the same week and commence at the other schools two weeks later. This staggered schedule permitted activities to be revised as necessary.

Activities for an At-Risk Population

Research into existing practices targeting "at-risk" students in the elementary schools revealed one particular program consistent with the goals envisioned by Randolph. This program, focusing on group classroom activities for an elementary school population, is entitled "The Effects of Classroom Guidance on Children's Success in School" (Gerler and Anderson, 1986), and was reviewed by Ann Moliver Rubin in Elementary School Guidance & Counseling, October 1989. The authors cite studies contending that a profile of potential dropouts can be identified as early as third grade.

The Gerler and Anderson program consists of ten sessions. It was field tested with over 800 fourth and fifth grade students where it was shown to significantly improve their attitude toward school. This attitude change within the framework of school success is the aspect of this program which we built upon through our developing activities.

Six activities were developed to be used with our identified "at-risk" population in small group settings at each of the four elementary schools. The program, entitled SUCCESS AT SCHOOL, focuses on the following topics:

Belonging
Cooperating with Others
Asking for Help
Improving at School
Good day/week at School
I'm a Winner

SESSION I - Belonging is designed to encourage the children to feel comfortable with the counselor and other group members. Most of the groups were comprised of children who did not know each other. Also, the children were not familiar with the counselor who was new to the district. The session employs a number of activities which allow the children to get to know each other and determine commonalities among them.

SESSION II - Cooperating with Others has students working with a partner to complete a specific task and working independently to achieve a similar goal. Students compare these experiences through a discussion which promotes the premise that cooperating can enhance many experiences. Comic strips (cut into frames) are to be arranged in sequence and tangram pieces are to be assembled to form prescribed shapes to facilitate the goals of this exercise.

SESSION III - Asking for Help assists students in identifying problems that interfere with attaining goals and applying a problem solving process to address these problems. The Disney video, Jiminy Cricket, P.S.(Problem Solver), introduces the problem solving process to the students who then apply the process to a number of situations where "help" is needed. A problem solving activity sheet is used by each student to address a stated problem: You need help with an assignment at school.

SESSION IV - Improving at School reinforces the problem solving process to identify how increased effort and goal setting can lead to success. This goal is accomplished as students identify their strengths and weaknesses. Each student selects one area where he/she would like to improve and identifies a strategy to address that area.

SESSION V - Good day/week at School identifies circumstances which promote a positive atmosphere in school and has students identify feelings which accompany increased levels of comfort or discomfort. Students are asked to describe how others at school can make their day better by responding to questions posed by the counselor and completing an activity sheet suggesting good/bad day scenarios.

SESSION VI - I'm a Winner enhances positive self-esteem as students identify positive characteristics of themselves and other group members. Students complete statements about themselves which highlight their favorable characteristics. The culminating activity has each student complete a graphic (star, gem, etc.) of their positive attributes. Input from other students in completing the graphic enhances the positive experience.

Evaluation Forms

Three evaluation forms were designed for use with the small group sessions for an "at-risk" population:

1. Group Evaluation (Student),
2. Group Evaluation (Facilitator)
3. End Evaluation

Group Evaluation (Student) This form was developed to be used by the counselor to elicit feedback from group members regarding their interactions, communications, and successes during the activities.

Group Evaluation (Facilitator) The counselor's assessment of each session is recorded on this form. The evaluation focuses more on the group dynamics, determining whether group members were supportive of each other. Space is also provided to document any other comments and considerations.

End Evaluation Four questions assess the group's feelings regarding being part of a group experience and their responses to the individual activities. The counselor would record the responses of younger children and older children should be encouraged to complete the form independently.

CAREER GUIDANCE GROUP ACTIVITIES
TELS GRANT

SUCCESS AT SCHOOL
SIX SESSIONS

I. Belonging

II. Cooperating with Others

III. Asking for Help

IV. Improving at School

V. Good Day/Week at School

VI. I'm a Winner

Based on concepts from "The Effects of Classroom Guidance on Children's Success in School"
(Gerler and Anderson, 1986, JOURNAL OF COUNSELING AND DEVELOPMENT)

GUIDANCE

CAREER-GUIDANCE-ACTIVITIES

EMPHASIS:
SUCCESS AT SCHOOL

THEME/FOCUS:
SESSION I
BELONGING

SUGGESTED GRADE LEVEL:
1-6

CAREER COMPONENT SELF KNOWLEDGE

COMPETENCIES:
Skills to interact with others.

INDICATORS:
1. Identify how people are unique.
2. Demonstrate effective skills for interacting with others.

OBJECTIVES:
1. Describe oneself as a group member.
2. Awareness of belonging.
3. Identify uniqueness.
4. Develop oral language skills.

ACTIVITY:
1. **State that we are all part of a number of groups. Question students as to what some of the groups are and what the people have in common.**
2. **Students will introduce themselves by name, grade, age, class, etc.**
3. **Students will decide what characteristics they have in common (Ice Breaker Activity Part I).**
4. **Students will interview each other to determine other common and unique characteristics (Ice Breaker Activity Part II).**
5. **Students will complete a web of groups to which they are members (Web Activity Sheet).**

MATERIALS:
Web Activity Sheet, Ice Breaker Sheets and pencils.

RESOURCES:

ICE BREAKER ACTIVITY
GETTING TO KNOW EACH OTHER.

Part I: About Yourself **Write the names.**

Do you have at least one older brother? _____

Do you have at least one younger brother? _____

Do you have at least one older sister? _____

Do you have at least one younger sister? _____

Are you an only child? _____

What is your favorite color? _____

What is your favorite subject? _____

What is your favorite school meal? _____

Part II: About Another Group Member

Brothers and sisters and their names. _____

Pets and their names. _____

Favorite school subject. _____

Least favorite school subject. _____

Favorite school activity. _____

Favorite food. _____

Favorite color. _____

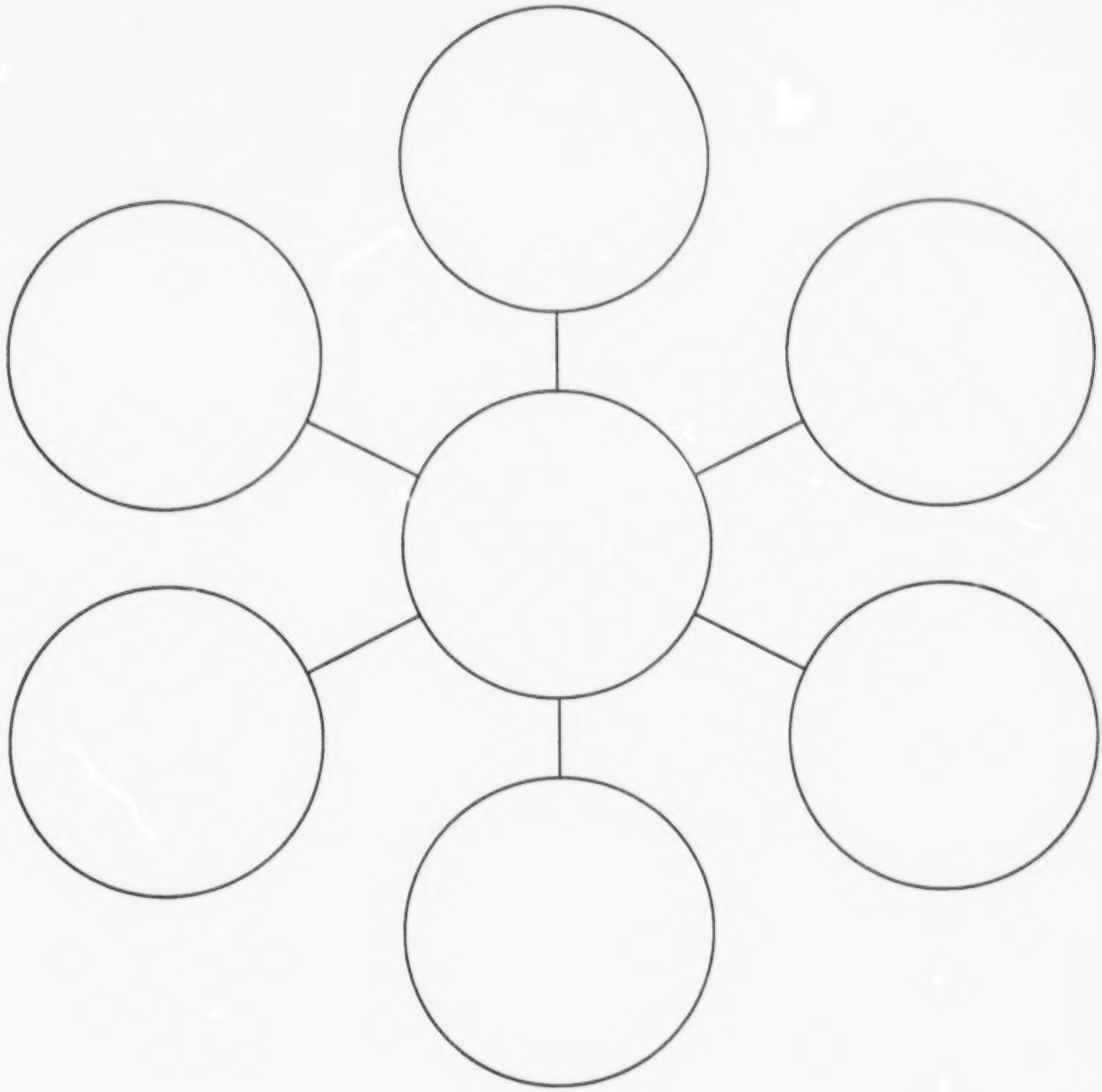
Favorite ice cream flavor _____

Favorite game. _____

Favorite sport. _____

Favorite TV show. _____

WEB ACTIVITY SHEET



GUIDANCE

CAREER - GUIDANCE - ACTIVITIES

EMPHASIS:	THEME/FOCUS:	SUGGESTED GRADE LEVEL:
SUCCESS AT SCHOOL	SESSION II - COOPERATING WITH OTHERS	K-6

CAREER COMPONENT SELF KNOWLEDGE

COMPETENCIES:

Skills to interact with others.

INDICATORS:

1. Demonstrate effective skills for interacting with others.
2. Demonstrate skills in resolving conflict with peers and adults.
3. Demonstrate group membership skills.
4. Identify sources and effects of peer pressure.

OBJECTIVES:

1. Gain experience working independently.
2. Gain experience working cooperatively.
3. Recognize the benefits of working in a group.
4. Experience a variety of feelings as one works toward a goal.

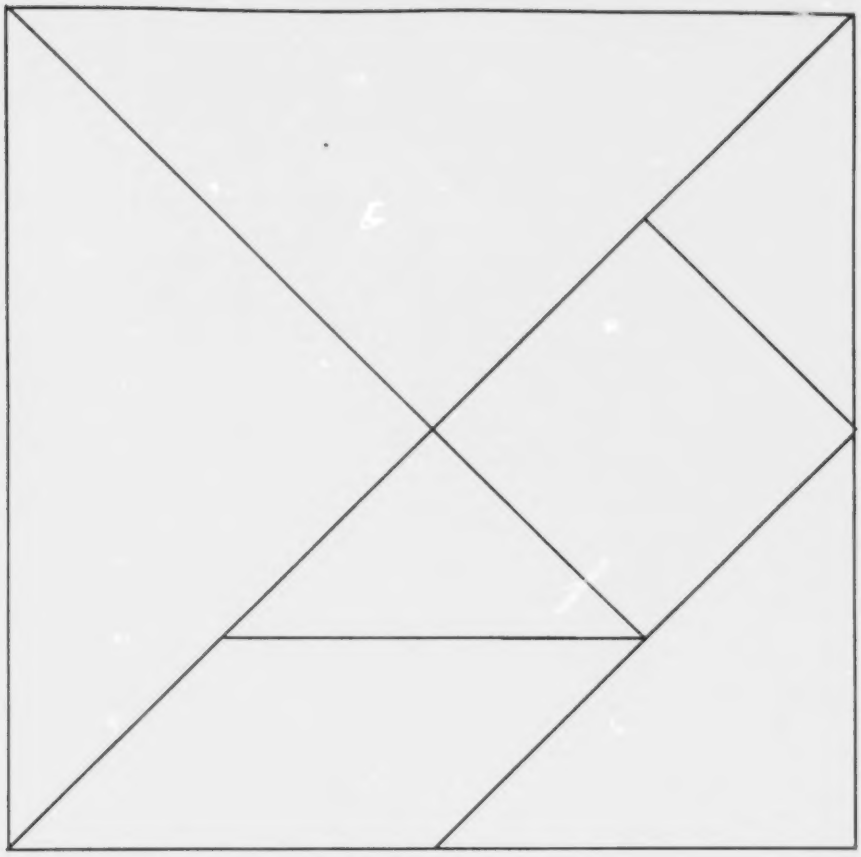
ACTIVITY:

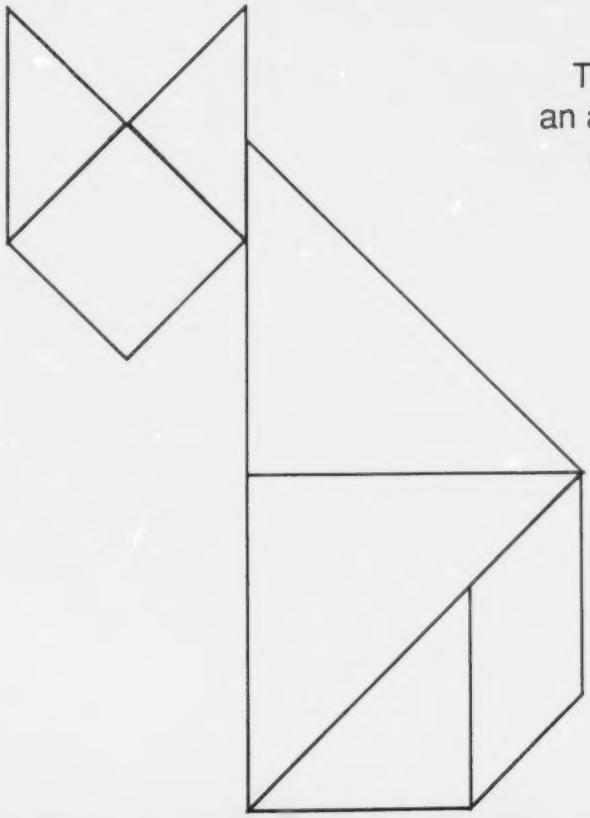
1. **Students work individually to put comic frames in sequence.**
2. **Students work in pairs to put comic frames in sequence.**
3. **Students work individually to assemble tangram pieces into the shape of a cat.**
4. **Students work in pairs to assemble tangram pieces into a square.**
5. **Students will share their feelings regarding each experience. Discuss the benefits of working in a group where communication is encouraged as compared to working alone.**

MATERIALS:

Comics (cut into frames) and tangram pieces.

RESOURCES:





TANGRAM

The square card and
an assembly of its pieces
representing a cat.

GUIDANCE

C A R E E R - G U I D A N C E - A C T I V I T I E S

EMPHASIS: SUCCESS AT SCHOOL

THEME/FOCUS: SESSION III - ASKING FOR HELP

SUGGESTED GRADE LEVEL: K-6

CAREER COMPONENT: EDUCATIONAL & OCCUPATIONAL EXPOLRATION

COMPETENCIES:

Awareness of the relationship between work and learning (school).

INDICATORS:

1. Demonstrate effective study and information-seeking habits.
2. Demonstrate an understanding of the importance of practice, effort, and learning.
3. Demonstrate how current learning relates to work.
4. Describe how one's role as a student is like that of an adult worker.
5. Identify and assess problems that interfere with attaining goals.
6. Identify strategies used in solving problems.
7. Identify alternatives in decision-making situations.

OBJECTIVES:

1. Identify personnel in service occupations who can render assistance.
2. Identify skills needed in various occupations.
3. Identify school personnel who can offer assistance.
4. Demonstrate strategies in problem solving.
5. Identify ways to request assistance.

ACTIVITY:

1. **Question students if they would ask for help if they were lost? If so, whom would they ask?**
2. **Identify situations as a problem to be solved and state the steps toward solution.**
   - **Identify the problem**
   - **Select one to try**
   - **Think up ideas to solve it**
   - **Test it**
3. **Show video JIMINY CRICKET, P.S. (PROBLEM SOLVER).**
4. **Review problem solving steps.**
5. **Apply problem solving steps to different situations.**
   a. **There is a fire.**
   b. **Someone is hurt.**
   c. **YOU NEED HELP WITH AN ASSIGNMENT AT SCHOOL.**
   d. **You have a question on the job.**
6. **Have students use the problem solving activity sheet and draw or write how each would handle situation C.**

MATERIALS:

Problem solving diagram and activity sheet, pencils, crayons.

RESOURCES:

JIMINY CRICKET, P.S. (PROBLEM SOLVER), available in each elementary school library. (Walt Disney Education Media Company, 800-423-2555)

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NAME_____ DATE _____

FOUR STEP PROBLEM SOLVING MODEL

FIND A PROBLEM.

IDEAS TO SOLVE THE PROBLEM.

TRY ONE.

TEST IT.

GUIDANCE

CAREER · GUIDANCE · ACTIVITIES

EMPHASIS: SUCCESS AT SCHOOL

THEME/FOCUS: SESSION IV IMPROVING AT SCHOOL

SUGGESTED GRADE LEVEL: 2-6

CAREER COMPONENT: EDUCATIONAL & OCCUPATIONAL EXPOLRATION

COMPETENCIES:

Awareness of the benefits of educational achievement.
Awareness of the relationship between work and learning (school).

INDICATORS:

1. Identify personal strengths and weaknesses in subject areas.
2. Describe relationships among ability, effort, and achievement.
3. Implement a plan of action for improving academic skills.
4. Demonstrate effective study and information-seeking habits.
5. Demonstrate an understanding of the importance of practice, effort, and learning.

OBJECTIVES:

1. Increase awareness of personal strengths and weaknesses.
2. Recognize relationships between effort and achievement.
3. Identify how increased effort and goal setting can lead to success.
4. Identify a strategy for improving in a school subject.
5. Identify ways to request assistance.

ACTIVITY:

Group Discussion

1. **Students are asked to identify the following:**
   - a. **Best time of the school day.** **Why?**
   - b. **Activity I like most in school.** **Why?**
   - c. **School subject I like best.** **Why?**
   - d. **School subject in which I do best.** **Why?**
   - e. **School subject in which I need to improve.** **Why?**
   - f. **School behavior I need to improve.** **Why?**
2. **Students will identify and share this information about themselves.**
3. **Each student will be asked how they could improve in the area he/she identified.**
4. **Others in the group will be asked to suggest additional ways each could improve.**
5. **After brainstorming ideas, each member of the group will identify a plan with which he/she is comfortable.**

MATERIALS:

Activity Sheet

RESOURCES:

GUIDANCE

C A R E E R - G U I D A N C E - A C T I V I T I E S

EMPHASIS:
SUCCESS AT SCHOOL

THEME/FOCUS:
SESSION V - GOOD DAY/ WEEK AT SCHOOL

SUGGESTED GRADE LEVEL:
2-6

CAREER COMPONENT: SELF KNOWLEDGE

COMPETENCIES:
Awareness of the importance of growth and change.

INDICATORS:
1. Identify personal feelings.
2. Identify ways to express feelings.
3. Describe causes of stress.
4. Identify and select appropriate behaviors to deal with specific emotional situations.
5. Demonstrate healthy ways of dealing with conflicts, stress, and emotions in self and others.

OBJECTIVES:
1. Identify positive and negative feelings regarding school.
2. Identify behaviors which cause increased levels of comfort or discomfort.
3. Identify circumstances which promote a positive or negative atmosphere at school.

ACTIVITY:
1. **Make the statement that we all have good and bad days at school.**
2. **Have all the students in the group describe a good day at school.**
3. **Have each student describe what might realistically happen on a bad day.**
4. **Have students identify what each of them can do to improve any given day.**
5. **Next have students describe how others at school can make their day better, eg.:**
   a. **People who cooperated in class.**
   b. **People who helped me and others.**
   c. **People who treated me kindly.**
   d. **People who were friendly.**
   e. **People who listened to me.**
6. **Have students respond to the statements on good/bad day activity sheet.**

MATERIALS:
Good/Bad Day Activity Sheet

RESOURCES:

GOOD DAY—BAD DAY

G	B	
☐	☐	1. You arrived at school late.
☐	☐	2. Your best friend is not in school.
☐	☐	3. Your teacher smiles at you as you reach the classroom door.
☐	☐	4. You get 100% on your spelling test.
☐	☐	5. You get a perfect attendance award for the month.
☐	☐	6. Report cards go home today.
☐	☐	7. You are the first one selected by the captain to be on the team.
☐	☐	8. Some classmates ask you to join them at recess.
☐	☐	9. Someone pushes you on the lunch line.
☐	☐	10. Your teacher calls on you and you have the right answer.
☐	☐	11. You raise your hand, but the teacher does not call on you.
☐	☐	12. You received a low grade on the Social Studies test.
☐	☐	13. No one paid much attention to you today.
☐	☐	14. Your best subject is canceled due to a special program.
☐	☐	15. You have been selected to represent your class in some special activities.

GUIDANCE

C A R E E R · G U I D A N C E · A C T I V I T I E S

EMPHASIS:
SUCCESS AT SCHOOL

THEME/FOCUS:
SESSION VI
I'M A WINNER

SUGGESTED GRADE LEVEL:
2-6

CAREER COMPONENT: SELF KNOWLEDGE

COMPETENCIES:
Awareness of the importance of self-concept.

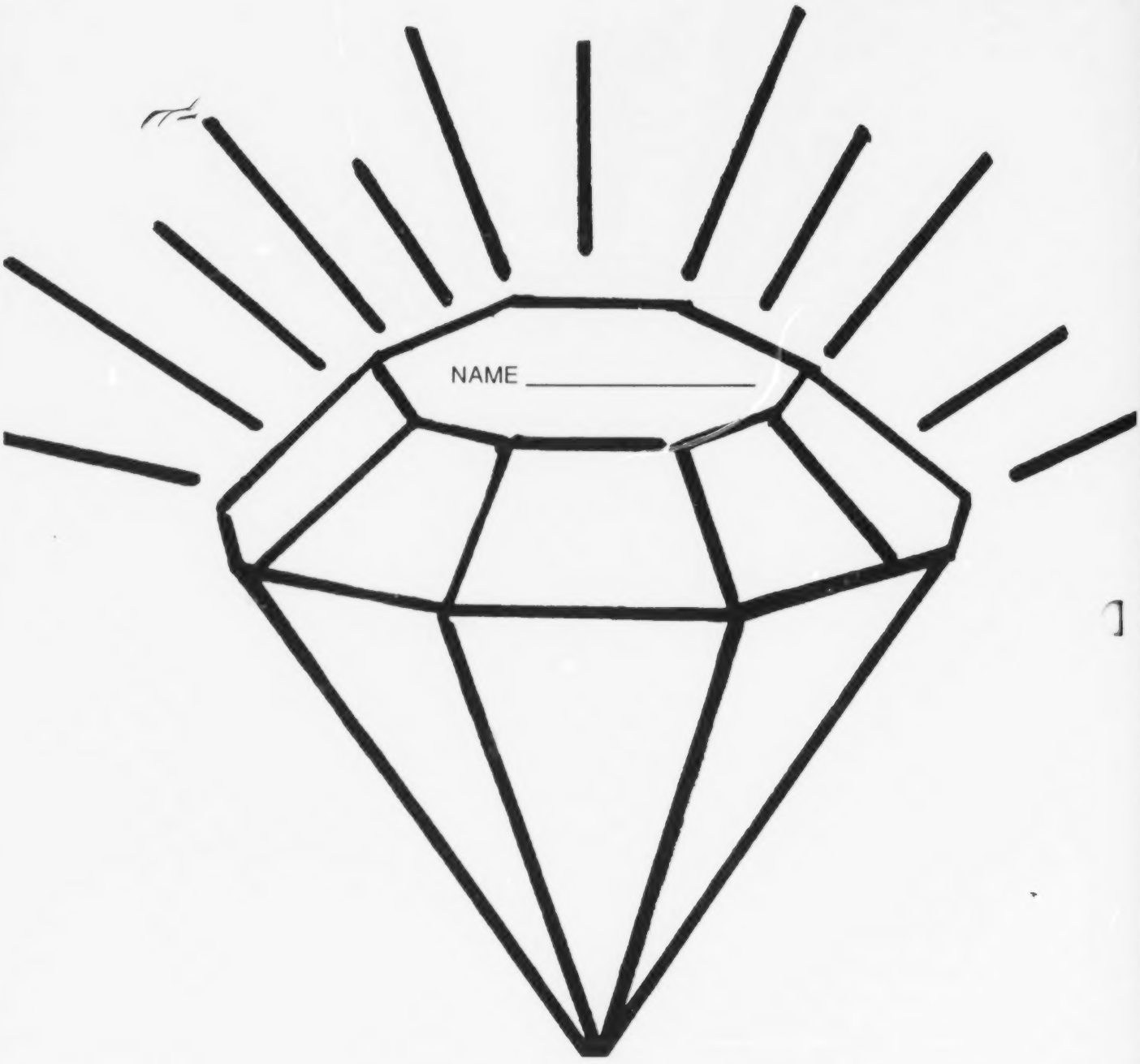
INDICATORS:
1. Describe positive characteristics about self as seen by self and others.
2. Demonstrate a positive attitude about self.
3. Identify personal interests, abilities, strengths, and weaknesses.

OBJECTIVES:
1. Identify positive characteristics about oneself.
2. Identify personal strengths of others.
3. State positive accomplishments.

ACTIVITY:
1. **Have students write something positive about each group member.**
2. **Have students respond to the following statements about themselves:**
   a. **My best physical feature is _____.**
   b. **People like me because _____.**
   c. **I've improved in _____ since the beginning of the year.**
   d. **Something I couldn't do last year that I can do now is _____.**
   e. **My proudest moment was _____.**
3. **Have the group fill in a graphic (star, gem, etc.) with each group member's name. Then list positive characteristics about each group member inside the graphic by their name.**

MATERIALS:
Graphic of star, gem, etc..

RESOURCES:


NAME _____

GROUP EVALUATION (STUDENTS)

Date _____
Task _____
_____
_____
_____
_____

Group Members

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

How Did Our Group Do?

1. We helped each other. yes _____ no _____

2 We worked together well. yes _____ no _____

3. We finished the task. yes _____ no _____

Here is one thing our group did very well.

_____

_____

_____

Here is one thing we need to do better next time.

_____

_____

_____

_____

_____

GROUP EVALUATION (FACILITATOR)

Date _____ **Task** _____

Group Members

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

How Did the Group Do?

1. Group stayed on task. yes_____ no _____
2. Group members shared. yes_____ no _____
3. Group members took turns. yes_____ no _____
4. Group members supported each other. yes_____ no _____

Additional Comments and Considerations.

_____

_____

_____

_____

_____

_____

GROUP ACTIVITIES (END EVALUATION)

Name _____
School _____

1. How did you feel about being in a group with other students to work on activities?

2. What are some of the things you liked about the group and the activities?

3. What are some of the things you did NOT like about the group and/or the activities and how could they be improved?

4. Would you like to be part of this kind of group again? Why?

CAREER DEVELOPMENT ACTIVITIES—GENDER-EQUITY

In exploring current educational thought in the career awareness and technology fields, gender-equity surfaced repeatedly in both arenas as an area of concern. Because of this overlap of concern, the Randolph district decided to approach the designing of Career Development Activities along this theme of gender equity.

The opportunity to become "effective, productive citizens" is one goal of education proposed by the National Education Association (NEA Today, September 1991). The Association further submits that "to achieve this goal, the career education concept must be interwoven into the total educational system and needs to include programs in gender-free career awareness and exploration to aid students in career course choice selection." At a recent seminar at Trenton State College, Peter Sellwood, a noted authority on technology education in Great Britain, emphasized the importance of gender-free language in presenting technology activities as well as across the curricula.

Addressing gender-equity issues provides the foundation for selecting courses in school as well as making life and career choices in the future. The American Association of University Women states that the under-representation of women in the fields of technology, mathematics, and science exemplifies these needs. (NY Times, April, 1992)

The damaging effect on life and career choices for both sexes is visible in our society. This gender-stereotyping is pervasive in our vocabulary, business practices, and consumerism.

> *Gender bias affects females in terms of low self-esteem, lowered educational and career aspirations, low economic status and unrealistic personal expectations. Gender bias affects males in terms of rigid role expectations, career choice, family relationships, and health issues (Wisconsin Department of Public Education, 1988).*

GENDER-EQUITY LESSONS

LESSON I focuses on dispelling a stereotypical idea that women cannot take charge of their lives and solve their own problems. The importance of assessing and identifying problems which interfere with attaining goals is targeted by this lesson. Creative thinking skills are employed as students address the problems of women characters in fairy tales.

LESSON II emphasizes the changing roles of men and women. The importance of education and effort are also stressed in preparing one for the challenges of the future. The story lines in the activity promote men and women in non-traditional work. These objectives are encouraged as students respond to updated versions of fairy tales produced by the Vocational Opportunities for Women grant for the State of New Jersey. To further enhance these goals, the students are challenged to update another fairy tale of their choice emphasizing the changing roles of men and women.

LESSON III addresses the awareness of the interrelationship of life roles and changing male/female roles. Students view the video version of "The Fable of He and She" where men and women are forced to take on non-traditional roles to survive after a natural disaster isolates men and women on opposite sides of an island. The activity requires students to address these changing life roles within the contexts of their own families. Emphasis is also placed on the skills needed to perform various life roles and whether either gender is able to perform the tasks.

LESSON IV assists students in identifying and exploring occupations. Lists of occupations are generated as students write an occupation next to each letter of their names. This exercise is used as a springboard to explore the skills required by the occupation generated as well as any gender biases associated with them.

LESSON V focuses on identifying stereotypical perceptions of the roles and contributions of women as portrayed by gender-biased vocabulary and occupational titles. Students respond to phrases such as "our forefathers" and "businessmen" and brainstorm alternative gender-free vocabulary.

CAREER GUIDANCE GROUP ACTIVITIES

TELS GRANT

GENDER EQUITY

TOPIC	SUGGESTED GRADE LEVEL
Breaking Female Stereotypes	K-6
Reinforcing Non-Traditional Roles	2-6
Changing Sterotypic Family and Life Roles	2-6
Non-Bias Occupational Awareness	4-6
Fighting Language Bias	5-6

Although grade levels are suggested, all activityes have been used effectively with students from grade 2 through grade 6.

GUIDANCE

CAREER · GUIDANCE · ACTIVITIES -- GENDER · EQUITY

EMPHASIS:
GENDER EQUITY

THEME/FOCUS:
BREAKING
FEMALE STEREOTYPES

SUGGESTED GRADE LEVEL:
K-6

CAREER COMPONENT: CAREER PLANNING

COMPETENCIES:

1. Awareness of the interrelationship of life roles.
2. Awareness of different occupations and changing male/female roles.
3. Understanding how to make decisions.

INDICATORS:

1. Describe the various roles an individual may have (e.g., friend, student, worker, family member).
2. Describe work-related activities in the home, community, and school.
3. Describe how family members depend on one another, work together, and share responsibilities.
4. Describe how work roles compliment family roles.
5. Describe the changing life roles of men and women in work and family.
6. Describe how contributions of individuals both inside and outside the home are important.
7. Identify and assess problems that interfere with attaining goals.
8. Identify strategies used in problem solving.

OBJECTIVES:

1. Promote gender equity.
2. Enhance concept that women can solve their own problems.
3. Stimulate creative thinking skills.

ACTIVITY:

1. **Read "A Message for Kids of All Ages."**
2. **Review the story of "The Woman Who Lived in a Shoe" and "Rapunzel."**
3. **Have students brainstorm ideas of how each woman could solve her problem.**
4. **Students will illustrate one of their ideas and write a descriptive paragraph.**
5. **Discuss drawings emphasizing women successfully solving problems.**
   OPTION: Complete TLA (Technology Learning Activity).

MATERIALS:

Paper and crayons.
Related TLA (Technology Learning Activity) for older children.

RESOURCES:

FAIRY TAIL-TWISTERS, Project VOW, Jersey City State College (1-800-272-7837).

A MESSAGE FOR KIDS OF ALL AGES

Fairy tales tell us that once upon a time, when women were in trouble they were always rescued by some smart, strong, rich, handsome guy!

No way!

Things were real **tough** in the olden days, just like things are real tough **today.**

Your family lived in the olden days. Your great, great, great grandma **and** your great, great, great grandpa had to work very hard **together.** They had to build a house, make clothing, grow food, take care of the sick people, teach their children—and they did all these things **together.**

Fairy tales tell us that in the olden days women couldn't do **anything**—they would just sit around trying to look pretty, waiting for some smart, strong, rich, handsome guy to rescue them.

No way!

Your great, great, great grandma didn't sit around and wait for **your** great, great, great grandpa to rescue her. They worked **together!** Women **and** men were smart, hard working and cared a lot about each other and their children.

Fairy tales were made-up stories about ogres, giants and dragons—and good guys and bad guys, just like TV shows. They were fun to listen to but they were **not true stories.**

So, now here we are in the **new** days, and things are still real **tough today.** What can **we** do about it?

You, girls and boys are just as smart, hard working and caring for each other as your great, great, great grandma and great, great, great grandpa **They** had to **learn** how to do all kinds of things in the olden days, like cutting down trees and measuring the wood to build a house, how to make warm clothing from wool or animal skins, how to figure out which plants made good medicine and how to love each other and care for each other.

The only difference between the **olden days** and the **new days** is the kind of things **you** have to **learn today.** Now, you **buy** a house, **buy** clothing and **buy** medicine. Of course, you still love and care for each other just like in the olden days.

In order to make money to buy things **today** you have to learn math, reading, science, computer skills and anything you will need to know for special jobs. And jobs don't care whether it's a **woman** or a **man** doing the job.

This project was conducted pursuant to a contract from the New Jersey State Department of Education, Division of Vocational Education and was funded under equity provisions of P.L. 98-524 the Carl D. Perkins Act.

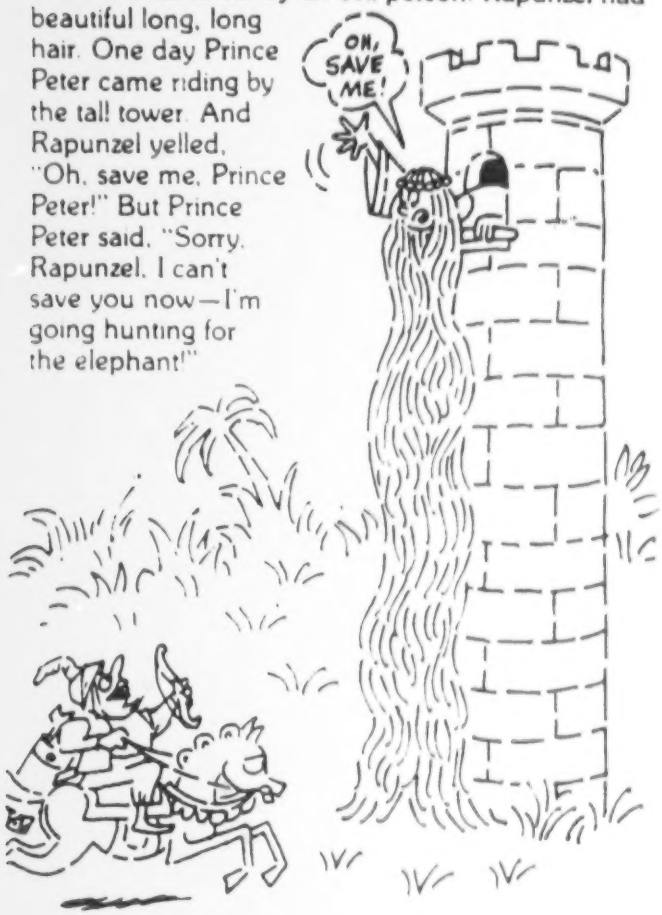
Opinions expressed are solely those of Project VOW.

Produced by Vocational Opportunities for Women Project
Carole Ucciferri, Director
Jersey City State College
The Center for Occupational Education
Jersey City, New Jersey 07305 FY 1990

Creative consultant: H. Sparber

RAPUNZEL

There once was a beautiful maiden whose name was Rapunzel. And she was put into a tall tower by an evil person. Rapunzel had beautiful long, long hair. One day Prince Peter came riding by the tall tower. And Rapunzel yelled, "Oh, save me, Prince Peter!" But Prince Peter said, "Sorry, Rapunzel, I can't save you now—I'm going hunting for the elephant!"



Then along came Duke Daniel and he couldn't save Rapunzel because he, too, was going hunting for the elephant—And Baron Bernie also couldn't save Rapunzel because he was going hunting for the elephant! So Rapunzel said, "Prince Peter, Duke Daniel and Baron Bernie can't save me—"

THE WOMAN WHO LIVED IN A SHOE

There once was a woman who lived in a shoe. She had so many kids she didn't know **what** to do! The shoe was full of kids who kept getting in each other's way. David sat on Maria's chair—Maria stood on Angelo's head—the twins ate the triplet's lunch. Perry, Tomasso, Laney, Wally, Molly, Susie and Geraldo took turns sleeping in the bed. Alexandra, Benny, Alyssa and Michelle squeezed into the crib. All the kids were punching each other!

GRADE 5/6

TECHNOLOGY - LEARNING - ACTIVITY

ACADEMIC EMPHASIS	THEME	OTHER SPECIFIC EMPHASIS	CONTRIBUTORS
LANGUAGE ARTS	BREAKING FEMALE STEREOTYPES	GENDER EQUITY	ARLENE BLOCK

SPECIFIC LEARNING ACTIVITIES:

By the end of this activity, each student will have accomplished:

1. Designing and building multi-functional furniture.
2. Preparing documentation of the process.
3. Writing a descriptive paragraph of the furniture designed.
   OPTION: Making an oral presentation to the class.

DESIGN BRIEF

Description of the problem and resources the students will be allowed to use in preparing their solutions.

PROBLEM/SOLUTION:
Design and build a model of multi-functional furniture which will help save space for the woman who lived in a shoe.

CRITERIA: 1. Model material is limited to two sticks of clay or 1/2 sheet of oaktag for the basic structure.

RESOURCES:

Time (how much is needed)
Three days, 30-45 minutes each day.

Energy (such as batteries or human)
Human

People (how many in each group)
Groups of 2 or 3

Knowledge (where can it be found)
Nursery Rhyme: THE WOMAN WHO LIVED IN A SHOE

Material (supplies allowed to be used)
For model: clay or oaktag
For accessories: cardboard for base, styrofoam, pipe cleaners, popsicle sticks, fabric scraps

Capital (how much money will it cost)
Cost of above, if not readily available.

Tools and Equipment
scissors, knife

TEACHER PREPARATION

Background and Lesson Introduction:
Women have frequently been stereotyped as weak and unable to solve their own problems. Children are exposed to this bias in early childhood through fairy tales showing the prince or some magical person saving the day.

Women don't need help to solve their own problems. They have the skills and confidence needed to make decisions and to come up with solutions.

Let's plan a way to help the woman living in a shoe to save some space so it is not so crowded. Let's design some multi-functional furniture to save space and that can be used as more than one thing.

Lesson Plan:

DAY 1: 45 minutes: Present the problem and brainstorm ideas. Students begin planning.

DAY 2: 30 minutes: One idea selected and students begin drawing plans.

DAY 3: 45 minutes: Build model and write descriptive paragraph.
OPTION: Fourth day to make oral presentations, 2-4 minutes for each group.

Progress Checkpoints:
1. At the end of brainstorming and deciding on one idea.
2. Check final plans prior to beginning construction.
3. Informal checks throughout construction.

LESSON GRADE-LEVEL OBJECTIVES:

1. Descriptive paragraph writing
2. Writing process
3. Organization skills
4. Study skills

INTERDISCIPLINARY POSSIBILITIES:

Writing

1. Preparing documentation
2. Writing descriptive paragraph about project

Reading

Reading skills reinforced through nursery rhymes and fairy tales.

Vocabulary

multi-functional

Math

None

Science

Structural qualities of materials, principles of architecture.

Social Studies

Cultural life roles

Career Awareness

Problem solving, teamwork, self-esteem, developing peer conflict resolution skills

Computers

Word processing to prepare documentation and descriptive paragraphs.

TECHNOLOGY EDUCATION PROFICIENCIES

- Identify, evaluate, select, and process resources to create and improve technological systems.
- Identify and demonstrate the technological design/problem-solving skills and processes when developing solutions to problems.
- Evaluate the impact of technology on the individual, society, and the government.
- Identify and demonstrate safety procedures and methods established by the teacher to process material, energy, and information.
- Communicate and process information effectively in the development, presentation, and evaluation of solutions to problems.
- Work independently and cooperatively in technological activities.
- Think creatively and critically to explore, discover, and solve technological problems.
- Research and evaluate the past and apply decision-making skills for shaping values.
- Recognize the evolving, dynamic nature of technology and demonstrate its potential for impacting futures.

NATIONAL CAREER DEVELOPMENT GUIDELINES—ELEMENTARY

SELF-KNOWLEDGE:

Knowledge of the importance of self- concept (COMPETENCY I)

- Demonstrate a positive attitude about self.

Skills to interact with other (COMPETENCY II)

- Demonstrate effective skills for interacting with others.
- Demonstrate skills in resolving conflicts with peers and adults.
- Demonstrate group membership skills.

CAREER PLANNING:

Understanding how to make decisions (COMPETENCY IX)

- Describe what can be learned from making mistakes.
- Identify strategies used in solving problems.
- Identify alternatives in decision-making situations.

Awareness of different occupations and changing male/female roles (COMPETENCY XI)

- Describe how work is important to all people.
- Describe the changing life roles of men and women in work and family.

GUIDANCE

CAREER · GUIDANCE · ACTIVITIES

EMPHASIS:	THEME/FOCUS:	SUGGESTED GRADE LEVEL:
GENDER EQUITY	REINFORCING NON-TRADITIONAL ROLES	2-6

CAREER COMPONENT: CAREER PLANNING

COMPETENCIES:

1. Awareness of the relationship between work and learning.
2. Awareness of different occupations and changing male/female roles.

INDICATORS:

1. Describe the importance of preparing for occupations.
2. Demonstrate effective study and information-seeking habits.
3. Demonstrate an understanding of the importance of practice, effort, and learning.
4. Describe the changing life roles of men and women in work and family.

OBJECTIVES:

1. Promote gender equity.
2. Emphasize the changing roles of men and women.
3. Encourage men and women in non-traditional work.
4. Stimulate creative thinking skills.

ACTIVITY: (2 DAYS)

1. **Read "A Message for Kids of All Ages."**
2. **Provide an updated version of two fairy tales: "The Three Little Pigs" and "The Tender-Hearted Giant."**
3. **Have students respond to the changing work roles portrayed in these versions as well as the required training.**
4. **Have students form groups of two or three. Provide students with books of fairy tales.**
5. **Have students select a story to update reinforcing changing roles of men and women. Stories should be recorded and shared with the rest of the class. Stories may also be illustrated.**

MATERIALS:

Paper, pencils, and crayons if illustrations will be done.

RESOURCES:

FAIRY TAIL-TWISTERS, Project VOW, Jersey City State College (1-800-272-7837).

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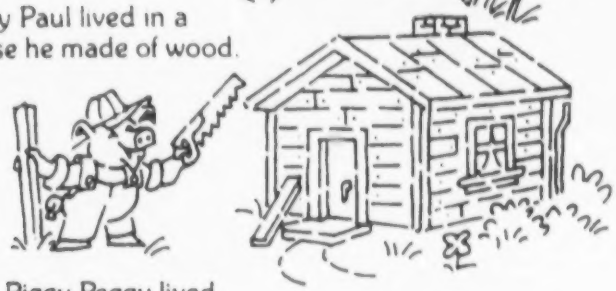
THE 3 LITTLE PIGS

Once there were three little pigs who lived in three little houses.

Piggy Pam lived in a house she made of straw.

Piggy Paul lived in a house he made of wood.

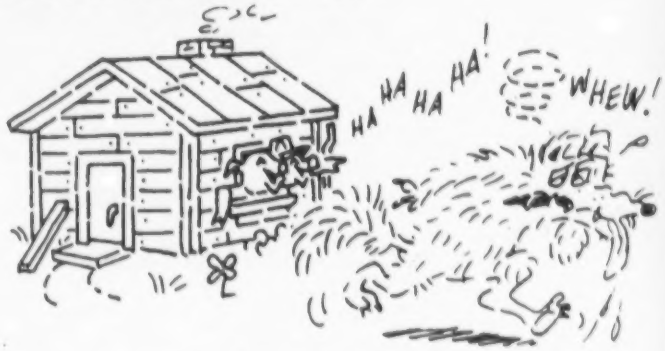


And Piggy Peggy lived in a house she made of bricks.

When along came a big, bad wolf with very sharp teeth.

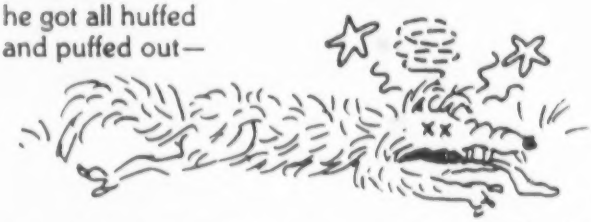
And the wolf said to Piggy Pam, "I'm gonna blow down your house of straw and then I'm gonna eat you all up! And the wolf huffed and puffed and blew the house down—but Piggy Pam ran away to Piggy Paul's house.

Then the wolf went to Piggy Paul's house and he huffed and he puffed, and he **huffed** and he **puffed** but he couldn't blow down the house of wood. Piggy Paul was a very good carpenter and he had learned how to build a strong wood house that a wolf **couldn't** blow down.



So the wolf went to Piggy Peggy's house that was made of bricks. He huffed and he puffed, and he **huffed** and he **puffed**, and he **huffed** and he **puffed** so much

he got all huffed and puffed out—

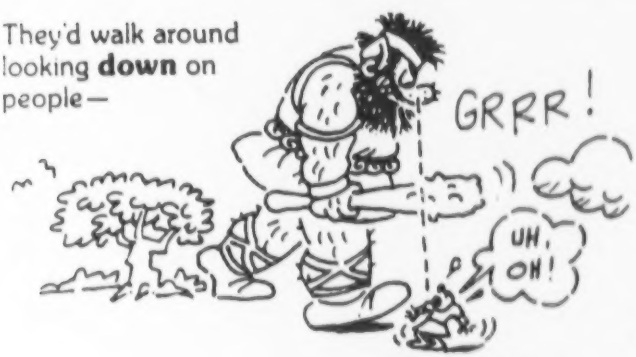


But Piggy Peggy was a very good mason. She had learned how to build a strong brick house that a wolf **couldn't** blow down! So the three little pigs took the big bad wolf and threw him in the garbage!

THE TALE OF THE TENDER-HEARTED GIANT

Once upon a time, long, long ago in a country far away, there lived a family of giants. They were all very bad giants—Poppa giant, Momma giant, little sister giant and little brother giant—They'd walk around, banging down the trees, stomping on people's houses, scaring the whole neighborhood and eating up the cows and chickens.

They'd walk around looking **down** on people—



They were **all** very bad giants—**all except one**—and that was Poppa giant's cousin, Thomas, the tender-hearted giant. Thomas **never** banged down the trees, he **never** stomped on people's houses, he **never, never** scared the whole neighborhood and he didn't eat up the cows and chickens. Thomas loved the little people, and so Thomas went to "child care" school to learn how to be a **"nanny."** He learned how to bathe a baby, how to diaper a baby, how to feed a baby, how to sing softly to a baby, how to rock a baby—

Yes, Thomas had a very tender heart and when he graduated he showed his **diploma** to his family of bad giants (and it took **fifty people** to make his diploma!) And they all said in a very loud voice, **"Wow! I want one!"**

And, so they all went to school, too, studied hard and graduated—and now the bad giants are all tender-hearted giants and the whole neighborhood loves them!

GUIDANCE

C A R E E R - G U I D A N C E - A C T I V I T I E S

EMPHASIS: GENDER EQUITY

THEME/FOCUS: CHANGING STEREOTYPIC FAMILY & LIFE ROLES

SUGGESTED GRADE LEVEL: 2-6

CAREER COMPONENT: CAREER PLANNING

COMPETENCIES:

1. Understand how to make decisions.
2. Awareness of the interrelationship of life roles.
3. Awareness of different occupations and changing male/female roles.
4. Awareness of the career planning process.

INDICATORS:

1. Identify and assess problems that interfere with attaining goals.
2. Identify strategies used in solving problems.
3. Identify alternatives in decision-making situations.
4. Describe how personal beliefs and attitudes affect decision making.
5. Describe how decisions affect self and others.
6. Describe the various roles an individual may have (e.g., friend, student, worker, family member).
7. Describe how family members depend on one another, work together, and share responsibilities.
8. Describe how work roles compliment family roles.
9. Describe the changing life roles of men and women in work and family.
10. Describe how contributions of individuals both inside and outside the home are important.
11. Describe skills needed in a variety of occupational groups.

OBJECTIVES:

1. Describe sex-role stereotyping.
2. Expand occupational perceptions to include both sexes.
3. Become aware of skills needed to perform different jobs.
4. Develop oral language skills.

ACTIVITY:

1. **Students should identify roles of their family members at home and at work.**
2. **View video "The Fable of He and She."**
3. **Discuss if and how the video changed students' perceptions of family and work roles.**
4. **Discuss the skills necessary to perform in various roles and whether either sex is able to perform the tasks.**

MATERIALS:

RESOURCES:

Morris County AVA—Video entitled, "The Fable of He and She"
Also available through Project VOW, Jersey City State College (1-800-272-7837).

GUIDANCE

CAREER · GUIDANCE · ACTIVITIES

EMPHASIS:	THEME/FOCUS:	SUGGESTED GRADE LEVEL:
GENDER EQUITY	NON-BIAS OCCUPATIONAL AWARENESS	4-6

CAREER COMPONENT: CAREER PLANNING

CAREER COMPONENT:
Educational and Occupational Exploration

COMPETENCIES:
1. Skills to understand and use career information.

INDICATORS:
1. Describe work of family members, school personnel, and community workers.
2. Identify occupations according to data, people, and things.
3. Identify work activities of interest to the student.
4. Describe jobs that are present in the local community.
5. Identify the working conditions of occupations (e.g., inside/outside, hazardous).
6. Describe how parents, relatives, adult friends, and neighbors can provide career information.

OBJECTIVES:
1. Describe sex-role stereotyping.
2. Expand occupational perception to include both sexes.
3. Become aware of skills needed to perform different jobs.
4. Develop oral language skills.

ACTIVITY:
1. **Have students generate a list of jobs held by family members and other adults they know.**
2. **Each student should write his/her full name vertically on a sheet of paper.**
3. **Write an occupation next to as many of the letters of your name as you can. Assure students they will receive help later with any letters giving them difficulty. (10 minutes)**
4. **Allow students to help each other, trying not to repeat an occupation used by the other student.**
5. **Assist students from attached list or from your own knowledge.**
6. **Question students regarding any gender biases of occupations: what skills are needed, what skills are required, is the job suitable for either sex.**
7. **Provide occupational information as requested.**

MATERIALS:
Paper and pencil.

RESOURCES:
Alphabetical Occupational List

ALPHABETIC OCCUPATIONAL LIST

A
actor
aircraft mechanic
announcer
artist
astronaut
audiovisual technician
author
auto mechanic

B
baker
banker
beautician
biologist
bookkeeper
building superintendent
bus driver

C
cable installer
camera operator
cashier
chef
clerk typist
coach
college faculty member
composer
computer operator
counselor
credit manager
custodian

D
dancer
decorator
dental assistant
dentist
detective
doctor

E
editor
electrician
electronics technician
engineer
eyeglass lens cutter

F
farmer
fashion designer
fashion model
FBI agent
film developer
fireman
food manager

G
gardener
gem cutter
geologist
glass cutter
graphic artist
greeting card editor
guidance counselor

H
hairstylist
head nurse
head waiter
health care worker
helicopter pilot
hospital administrator
hospital attendant
hotel clerk

I
industrial engineer
inspector
instrument maker
insurance agent
international lawyer
interpreter

J
janitor
jeweler
judge
juvenile officer

K
key punch operator
kidney machine technician
kindergarten teacher
kitchen worker

L
laboratory assistant
landscape architect
legal assistant
librarian
life insurance agent
line installer
lithographic press operator
loan officer
locksmith
LPN (licensed practical nurse)

M
magician
magistrate
mail carrier
managing editor
manufacturer
marine biologist
market researcher
mathematician
medical technologist
minister
model
motel manager
motion picture director

ALPHABETIC OCCUPATIONAL LIST

N
narcotics detective
narrator
news reporter
newspaper carrier
nuclear engineer
nurse

O
obstetrician
occupational therapist
oceanographer
optician
oral surgeon
orchestra conductor
orderly

P
package designer
paper hanger
paralegal assistant
park ranger
pediatrician
personnel manager
photographer
pilot
plumber
postal clerk
printer
programmer
purchasing agent

Q
quality assurance inspector
quality control technician
quartermaster

R
rabbi
radio announcer
radiologic technician
ranger, park
real estate agent
registered nurse
reporter
retail sales worker
route driver

S
salesperson
science teacher
secretary
security guard
sergeant
service manager
singer
social worker
sportscaster
surveyor

T
taxi driver
teacher
telephone installer
telephone operator
television announcer
teller
ticket agent
town manager
turf grass manager

U
ultrasound technician
undertaker
underwriter
upholsterer
urban planner
used car salesperson

V
vending machine technician
veterinarian
video control technician
vocational counselor

W
waiter
watch repairer
water treatment plant operator
weather forecaster
word processing operator
writer

X
x-ray technician

Y
yard clerk
yard worker
young-adult librarian

Z
zoo groundskeeper
zoologist

GUIDANCE

C A R E E R - G U I D A N C E - A C T I V I T I E S

EMPHASIS:	THEME/FOCUS:	SUGGESTED GRADE LEVEL:
GENDER EQUITY	FIGHTING LANGUAGE BIAS	5-6

CAREER COMPONENT: CAREER PLANNING

COMPETENCIES:

1. Understanding how to make decisions
2. Awareness of different occupations and changing male/female roles

INDICATORS:

1. Describe how personal beliefs and attitudes affect decision making.
2. Describe how choices are made.
3. Describe changing roles of men and women in work and the family.

OBJECTIVES:

1. Identify gender bias in everyday vocabulary.
2. Identify gender bias in occupational titles.
3. Identify gender-free alternative vocabulary.
4. Demonstrate use of gender-free vocabulary.

ACTIVITY:

1. **Students are asked to describe a mental picture of the following situations:**
   a. **Our forefathers settling this country**
   b. **Businessmen at work**
   c. **Firemen**
2. **Discuss the gender references of these words and suggest alternatives:**
   a. **Forefathers - ancestors**
   b. **Businessmen - executives, managers**
   c. **Fireman - firefighter**
3. **Identify additional gender biased words and have students suggest alternatives:**

BIASED	NON-BIASED
man-made	synthetic, artificial
middleman	go-between
lady-like	polite, proper
momma's boy	spoiled, immature
he-man	powerful

4. **Lead a discussion on how the biased words can affect our attitudes and perceptions of situations and occupations.**

MATERIALS:

RESOURCES:

INDIVIDUAL CAREER PLANS

The Individual Career Plan is an outgrowth of the desire to monitor each student's achievement of the career guidance and counseling competencies over the course their schooling. This instrument may be used at each grade level to follow the individual's progress in meeting the competencies outlined in the National Career Development Guidelines (NCDG) for the elementary school, middle school or high school level.

The NCDG handbook includes a sample Individual Career Plan which encompasses the K-6 competencies and is devised to be updated each year to reflect each student's progress in meeting these competencies. The Individual Career Plans developed by Randolph addresses this system of monitoring proficiencies with a specific age-appropriate plan for each grade level based on NCDG.

Implementation

The goals to be addressed by the implementation plan are:

1. One to three classroom guidance lessons presented by counselors.
2. Individual Career Plans administered by teachers.
3. Review of Individual Career Plans by counselors.
4. Retention of Plans in cumulative folders.

To maximize the value of the Individual Career Plans at the elementary level, the Plans should be used in conjunction with classroom guidance lessons targeting the same competencies. One to three counselor-facilitated lessons would be presented in each classroom focusing on the competency assessed in the grade-level plan.

The Individual Career Plan would be administered by the classroom teacher after the completion of the guidance lesson(s) acting as a culminating activity and assessment instrument. The counselor would review the completed Plans on an individual and grade-level basis to monitor achievement toward each competency. The responses to this instrument could also serve to identify potential problems among the student population which could be addressed on an individual or group basis.

An Individual Career Plan folder would be established for each student and become part of the cumulative folder.

Grade-Level Plans, K-6

Kindergarten Plan The child identifies his/her "likes" with regard to school and jobs. This is accomplished through a drawing activity. (SELF-KNOWLEDGE, EDUCATIONAL AND OCCUPATIONAL EXPLORATION)

Grade 1 Plan This plan continues to focus on "likes" as it targets what the child likes about himself/herself. The activity has each student circle some of the characteristics of oneself from a list provided as well as generate a drawing. (SELF-KNOWLEDGE)

Grade 2 Plan This plan promotes an " I Can " approach as students identify current and anticipated skills and those skills that are important for school success. (SELF-KNOWLEDGE)

Grade 3 Plan The third-grade plan addresses an awareness of strengths and weaknesses. The activity requires students to identify skill or subject areas that constitute a positive experience in school as well as areas which need improvement. (EDUCATIONAL AND OCCUPATIONAL EXPLORATION)

Grade 4 Plan At fourth grade the students express more specific "likes and dislikes" regarding themselves and their emotions. This plan's format has students complete items about their likes and dislikes. (SELF-KNOWLEDGE)

Grade 5 Plan This plan allows students to investigate feelings and each individual's mode of expression. Students identify ways they have felt and describe their behavior when confronted by different feelings. They also respond to thought provoking questions regarding common life situations. (SELF-KNOWLEDGE)

Grade 6 Plan The sixth grade plan promotes more focused thought about the world of work. Identifying how chores at home correspond to ways people earn a living; describing how people in the community are employed; and assessing the student's level of knowledge and progress in career planning defines the scope of this grade level plan. (EDUCATIONAL AND OCCUPATIONAL EXPLORATION, CAREER PLANNING)

INDIVIDUAL CAREER PLAN FORM

ELEMENTARY LEVEL

This activity will serve to monitor student achievement of the career guidance and counseling competencies and assist in developing an educational and career plan.

Instructions

1. An Individual Career Plan shall be kept for each student for every year that the year that the student is enrolled in an elementary school in the district.

2. This plan will be administered by grade level teachers at a time designated by the district and reviewed by the counselor to assess achievement in each competency.

3. An Individual Career Plan folder will be part of each student's permanent cumulative file.

NAME _____
LAST FIRST MIDDLE

DATE OF BIRTH _____

SCHOOL _____

INDIVIDUAL CAREER PLAN
Kindergarten

"ME"

Draw a picture of you doing a school activity you like.

Draw a picture of you doing a job you might like to do when you grow up.

INDIVIDUAL CAREER PLAN
grade 1

"WHAT I LIKE ABOUT MYSELF"

Circle the words in the lists that tell the best things about you.

eyes	careful	strong	shy	serious
hair	happy	hard worker	fast	playful
smile	gentle	helpful	funny	honest
friendly	loving	rough	neat	smart

Draw a picture of yourself showing some of the things that you like.

INDIVIDUAL CAREER PLAN
Grade 2

"YOU CAN ALREADY DO MANY THINGS"

1. Circle the activities you can do now.

2. Draw one line under the activities you will be able to learn or do better in the next few years.

3. Put an "X" before the words that describe activities that are important to do well in at school and/or on a job.

____ draw	____ read	____ follow directions	____ multiply
____ listen	____ subtract	____ make lunch	____ make decisions
____ sew	____ talk	____ ride a bicycle	____ make friends
____ write	____ add	____ solve problems	____ drive
____ skip	____ crawl	____ work in a group	____ sing

INDIVIDUAL CAREER PLAN
Grade 3

MY STRENGTHS AND WEAKNESSES

My favorite subject(s):

_____

_____

_____

My best subject(s):

_____

_____

_____

I'm good at (sports, drawing, reading, etc.)

_____

_____

_____

I need to improve in:

_____

_____

_____

I can improve by:

_____

_____

_____

INDIVIDUAL CAREER PLAN
Grade 4

MY LIKES AND DISLIKES

I "like" to play _____ "dislike" _____

I "like" to eat _____ "dislike" _____

I "like" to do _____ "dislike" _____
at school

I "like" to do _____ "dislike" _____
with my family

I "like" _____ "dislike" _____
about my neighbors

_____ makes me happy _____ makes me sad

_____ _____

_____ makes me laugh _____ makes me angry

INDIVIDUAL CAREER PLAN
Grade 5

MY FEELINGS

Circle the words that express ways you have felt.

happy	proud	worried	cheerful
sad	brave	nosey	hurt
angry	quiet	glad	jealous
scared	nervous	strong	loving
alone	excited	curious	pain

How I act when I'm happy _____

_____

What I do when I'm sad _____

_____

What I do when I'm mad _____

_____

How can you clear up a misunderstanding? _____

_____

_____

What do you think about when you make a decision? _____

_____

_____

How can you prevent a fight? _____

_____

INDIVIDUAL CAREER PLAN
Grade 6

THINKING ABOUT JOBS

What are three chores or jobs someone does at home that are also ways that people can earn a living?

What are some ways that people earn a living in your community?

What kind of job might you have in the future?
What skills would you need?
How would you go about learning more about a job that might interest you?